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THE GREAT EXHIBITION.

THE FINE ARTS DEPARTMENT.

THE exclusion of the painter's art from participation in the scheme of the Great Exhibition was an error of judgment on the part of the Commissioners, which is forced upon the attention more and more forcibly every time one visits the Crystal Palace, and which it seems utterly impossible to account for. At a time when the application of decoration upon the true principles of design is being attempted, under the auspices of Government committees, not only in the palaces of the nation and the houses of the great, but also in the more humble abodes of the middle classes (through the operation of Schools of Design)—at a time when furniture, dress, and utensils for the table all come in for a share of the improved taste of an age ambitious in art, it seems an act of fatuity, when preparing a Grand Exposition of the Works of Industry of all Nations, to exclude from the lists that very branch of art which affords the highest resources for decoration, as well as the most abundant and varied examples both of composition and colouring. The assiduity and interest with which the thousands who throng to the Exhibition in Hyde-park examine the miscellaneous contributions of sculpture from all nations, must assure us that the masses are susceptible of enjoyment from the contemplation of works of fine art; and although the specimens here presented to them fall far short of the standard of excellence, and although the impromptu criticisms of the multitude by no means evince an advanced taste, yet we feel so much confidence in the ultimate triumph of truth, which in art is beauty, that we are inclined to look for practical good results even from this scrambling course of self-education, amid a sort of wilderness of wild flowers.

And if good so result from observations on sculpture obtained in this way, by millions who never saw a work of sculpture before, how much more useful to them would be some notion of the principles and practice of painting, involving both composition and colouring—an art much more intimately and generally applicable to the purposes and requirements of social life;—and if a comparison by the more critical portion of the community of the works, we can hardly venture] to say the schools, of sculpture of various nations, be interesting and instructive, would not a similar comparison of works of painting be at least equally so? The importance of such a *concourance* to English art it would be impossible to overrate, when we reflect upon the comparatively short and chequered career which art, since its revival, has had in this country. It is scarcely more than a century and a half that art has held any position amongst us; since Sir James Thornhill, starting in rivalry to La Guerre, the favourite decorator of the mansions of the nobility of that day, received a commission from the State to paint the interior of St. Paul's Cathedral and the hall of Greenwich Hospital, in which he was assisted by a German named André, and which he contracted to do at the rate of £2 per square yard! It is not a century since the first attempt to establish an Academy of art was made, inaugurated by the learned and admirable Discourses of Sir Joshua Reynolds; and in the course of that period, what have we done towards the formation of a school of art? what definite purpose or rules of

"BRITONS LAMENTING THE DEPARTURE OF THE ROMANS."—BY E. CORBOULD.

taste have we arrived at? The answer to these questions must be given by a silent and significant pointing to the walls of the various exhibition rooms in Trafalgar-square, Suffolk-street, and Pall-Mall, where all has long been caprice, and glitter, and wild confusion, and where now a portion of our exhibitants seem to seek for unity of purpose, by devoting their pencils to a miserable copyism of the poorest mediæval models. Thus, whilst in little more than two centuries (Giotto died in 1336, Raffaelle in 1520), revived art in Italy arrived at its highest point of excellence and power under a Raffaelle, who founded a school which, in the persons of a Correggio, a Giulio Romano, and a Parmegiano, survived some time after him—in England, in about the same period, after various unconcerted efforts, and fostered by much indiscriminating patronage, we find art, having never once attempted a flight of the highest ambition, degenerating at once into the stiff and inanimate mannerism of the twelfth and thirteenth centuries.

There is no hope of remedy for such a state of things, but in wholesome exposure in the broad daylight of public scrutiny. We must meet extravagance with extravagance; and native affectation being confronted by conceits from abroad (where there is much of the same error to complain of), shame and mutual ridicule may correct much; whilst the strong arm of criticism and the loud voice of popular condemnation will do the rest.

But it is not only to an exhibition of modern art of all nations that we should have looked as the means of educating the public taste. The

COLOUR-BOX.—BY MESSRS. ACKERMANN.

vast avenues of the Crystal Palace, which might, without much trouble, have been prepared for the purpose, would have afforded an admirable opportunity for forming an exhibition of by-gone art, arranged in order of schools; an exhibition of the highest interest and utility, which, from the nature of circumstances, has never yet been carried into effect, and for which the spacious resources of the World's Fair in Hyde-park afforded the first, and perhaps the last, opportunity. Of the necessary materials for furnishing forth such an exhibition, we cannot entertain a doubt, had the opportunity been afforded, seeing the alacrity with which foreign potentates, and our own most gracious Sovereign and her Consort, have freely sent in the costliest articles of jewellery and *vertù* in their possession, to enhance the attraction of the Exhibition; and how their example has been followed by wealthy public companies, by noblemen and private gentlemen, each anxious to contribute their or his mite to the general splendour, but who, we are convinced, would have been far more proud to have shown a Raffaelle or a Rembrandt, than a "jewelled hawk" or a necklace once the property of the poor King of Arcot; and the public—the more intellectual portion of it—would have been much more obliged to them for such contributions, and the men of art, and the men of taste of all Europe, would have thanked them for helping to make up a show of precious worth and enduring interest, the recollection of which would have served to light their paths during a life of toil and study in the pursuit of excellence and beauty in art.

It is useless to enlarge upon the practical advantages and the intellectual charm of such an Exhibition; it has been denied us: and although a department in the Crystal Palace has been named the "Fine Art Court," the very existence of such a compartment is a mockery when coupled with the announcement that—

"Oil paintings and water-colour paintings, frescoes, drawings, and engravings, are not to be admitted, except as illustrations or examples of materials and processes; and portrait busts are not to be admitted.

"No single artist will be allowed to exhibits more than three works."

It is true that this regulation is not very clearly worded, and that it might be evaded, as all ill-advised and purposeless laws may be; almost every oil or water colour painting, or drawing, or engraving, being more or less available as "illustrations of materials or processes employed." Indeed, we could name several publishing houses who have managed to gain admission for a variety of engravings, either published or in progress, and water-coloured pieces destined in due course for the hands of their engravers. And as to "fresco" painting; why should that be excluded, if distemper and other like processes be admitted, in which we have abundant examples of wall decoration? We have abundant evidence on every side, moreover, that the rule has been relaxed as regards the number of works to which each exhibitor was to be restricted. But still the general object of the rule, whatever that object was, has been effected; and the "Fine Arts Court" is crowded with very ordinary terra cotta casts, including brick-coloured and by no means delicately treated nymphs of heavy proportions, wax models, wax flowers, nick-nackeries in colour printing, and fancy stationery, card models of houses and gardens, dolls dressed in court and other costume, egg shells carved and engraved with fancy views, models in willow-wood, models in paper, and every conceivable absurd toy which could enter into the conception of a boarding school miss, and which render this department, as far as it goes, a positive blot upon the otherwise fair face of the Great Industrial Exhibition of all Nations. And it is really curious to see the shifts which poor Art, being excluded under its ordinary forms, yet manages to represent itself in the Great Congress of Industry, and what inconsistencies and waste of space this leads to. Although "oil painting and water-colour painting, frescoe, drawing, and engraving" have been declared inadmissible in their general sense—that is in their best and noblest performances—the pictorial genius of Europe still manifests itself abundantly on all sides in almost every conceivable material but the prohibited canvass; upon porcelains, from France, from Vienna, from Milan, from Dresden; upon glass from Berlin and other parts of Germany; upon tin from Wirtemburg; upon plate-iron from Thuringia: then we have mosaics from Rome not a few, and beautiful of their kind; and from Munich we have a collection of "stereochromic" pictures, executed upon wood covered with mortar, "a process intended as a substitute for (the prohibited) fresco-painting." Sir William Newton has been allowed wall-room for several pictures upon ivory, representing the "Homage at the Coronation," the "Marriage of her Majesty," and the "Christening of the Prince of Wales," &c.; but their reception in his case may perhaps be explained by the announcement that the ivory in these works is "joined together by a process of his own invention." Mr. Haslem and Mr. Bone have some enamel pictures on gold—many of them Royal portraits, others copies from old masters; and Mr. Essex shows "an extensive collection of enamel paintings," copies from Royal and noble collections. In short, whilst High Art has been rigorously excluded, Little Art has been greatly favoured. As to the prohibition of engravings, it has been found impossible to carry it out; and accordingly we find whole shop-loads of them in various styles in different parts of the Building, some framed, others loose. In addition, we are startled here and there with some wonderful imitations of engravings, and pen and ink drawings, in silk, in human hair, in crape, &c.; which, as soon as the first impulse of curiosity is over, only leave upon the mind of the spectator a feeling of disappointment and irritation.

Whilst upon the subject of simulative processes, we may refer to some "poker drawings," upon wood, by the Rev. W. Calvert, and some specimens of the art of "xulopyrography," or charred wood engraving, exhibited by Lieut. C. Marshall and Mr. J. T. Mitchell, and which are entitled to rank in a higher category than the contrivances named at the close of the preceding paragraph. The latter productions are somewhat similar in appearance to old sepia drawings, and in their process of working have something in common with poker drawings. The difference between charred wood carvings, or engravings, and the said "poker drawings," is that the formerare cut from the surface of hard and white wood, which has been previously completely cbarred over, the lights and shadows being effected by scraping gradually away the black surface to the necessary depth, according to the shade required, going below where the burning extends for the absolute lights: whereas "poker drawings" are burnt on the surface of white wood, the lights being left and the shades burnt in. One of Mr. Mitchell's specimens is taken from a rare mezzotinto engraving by Prince Rupert, who, by the way, was long supposed to have been the inventor of the last-named process, though of this there is some doubt, it being probable that he learnt the art from Colonel Louis Von Siegan. The subject is the "Execution of St. John the Baptist," after Spagnoletti. The other specimen by this exhibitor is taken from Uwins' "Chapeau de Brigand" (in the Vernon Collection), and is of more minute workmanship than the preceding one. Lieut. Marshall exhibits, we think, three or more of his works in this line, the most important of which is after Raffaelle's cartoon of "St. Peter preaching."

The Engraving which accompanies the present article is taken from a small picture by E. Corbould, which has been admitted to decorate a very dark corner of the Fine Arts Court, not as a specimen of art, but of Miller's silica colours, in which it is painted. Besides this, we have one or two other specimens of a like kind, and exhibited for a like purpose; as, for instance, two of Concannon's new method of aërial tinting by calcined colours, and some designs in the crayons and chalks of some other manufacturer, whose name we have forgotten. Beneath these, and some other gaudier displays of colours, rainbow or prism fashion, are ranged the brushes, palettes, and other implements necessary for using them; and so complete and instructive is this exposition of art-requirements considered by Mr. Rowney, one of the exhibitors, that he places a little plaster group, entitled "Letting the Cat out of the Bag" in the midst of his compartment, as much as to say that the mysteries of the craft exist now no longer, and that amateurs may all be artists if they please to lay in a stock of the necessary materials. In Mr. Ackermann's department we were agreeably struck with a very elegant colour-box, of which we give an Engraving.

The above flying notes, though unimportant in themselves, may be interesting some future day, as affording a notion of the position held by the Fine Arts in the Great Exhibition of Industry of All Nations of 1851.

THE DINNER-TABLE AND ITS ACCESSORIES.

SEVERAL articles have already been devoted to the food of man, and more than one have treated of the *rationale* of its preparation, generally by means of heat. There is still, however, a phase of the general subject left untouched. The moment of projection was the culminating period of the old alchemist's labours; the moment of consumption is the all-important point to which the toils of producer and preparer of food are directed. Then it is that the delicacies and refinements of many collateral crafts meet and are tested—then it is that taste, mental and physical, the taste of the brain and the taste of the palate, join their forces, and, on happy occasions, rejoice in the achievement of a consummate dinner consummately served—harmony in the meats and drinks—harmony in their relation and their order—harmony in the adornments of the table—that united harmony which satisfies the eye loving to look on symmetry, and the mind loving to look on well-arranged and well-adapted utility. Englishwomen, said the *Quarterly*, very rudely clothe themselves; French women dress. Of course, we are as far as we ought to be from giving in to such a dictum; but as to this proposition there can be no doubt. Uncivilised man eats, stuffs, crams, feasts, gorges—what you will. Civilised man dines. The one process is the rude satisfying of a natural need; the other a refined ministering to the same want, and also the exercise and enjoyment of an acquired and elaborately tutored taste for the mentally and physically harmonious. To furnish forth a dinner for uncultivated man, you want nothing but succulent meats. Give a cannibal a slice of his neighbour, or a City gourmand turtle, and you do all that is requisite—they only think of the mere food. But take a man who understands what dinner really means, and the food shrinks, not to a secondary, but to a co-ordinate rank with other matters. He thinks of the bill of guests as well as the bill of fare—of the harmony and propriety of all the appointments of the table. He will have all the better appetite if the decorations of the porcelain be in the purest taste, if the structure of the dishes be such as to preserve the meats in their highest perfection until the last moment, if the drinks sparkle in classically moulded crystal, and if the central *épergne* rise a gem of floral beauty in the midst. This refinement and delicacy in the serving forth of a dinner must always be a token of a high and elaborate civilisation. "To eat" is a sort of raw material verb; "to dine," is that raw material wrought up after the usages and modes of life of artificial and polished society. Our articles upon the food of man, and the employment, in its simpler and more fundamental methods, of heat to cook it, applied, therefore, simply to eating; we wish to devote this paper upon the table, and its appurtenances and accessories, to dining.

Before the guests assemble, the cook must have been at work. Beginning, then, with the beginning, a glance into his regions may not be without its propriety. Both the metropolis and the hardware manufacturing northern and midland counties send an infinity of cooking apparatus—ranges, stoves, and roasting grates. These, in their more scientific and mechanical qualities, have already been noticed; but we would pause to congratulate society in general upon the great ingenuity and energy which have of late been evidently applied to the apparatus of the kitchen. The antiquated imbecility about what was called "plain wholesome English fare"—plain roast and boiled—is now happily disappearing as fast as it can go, and we are beginning to recognise the truth, that, in despising the "foreign messes" and "French kickshaws," which our worthy ancestors so valiantly condemned, we were simply cutting ourselves off from all the delicacies and refinements of cookery—confining ourselves to those rude methods of dressing food which savages practise—wasting an unconscionable quantity both of fuel and of meat, and laying a worthy foundation for all that mass of stomach and nervous complaints which has made England, certainly, the most indigestive nation on the face of the earth. Occasionally, indeed, we hear of the brutal barbarism of roasting an ox whole; the expenditure of fuel, of course, enormous; and the result, half cinders, half red flesh: but, generally, we would hope, that, as enlightenment and common sense make their way amongst us, bearing with them seas of good and cheap cookery books, the reign of skilful little made dishes—of combinations of vegetable and animal food—of pleasantly piquant sauces, is making head, and that at last an Englishman's dinner is beginning to be characterised by something like variety; that it will not to all time alternate between beefsteaks to-day and mutton chops to-morrow; boiled mutton this time, and roast beef that. There was deep truth in that thoroughly English proverb, "That God sends meat, but the devil sends cooks." In France the arrangement was and is the converse. Stuffed with half-roasted meat and greasy plum-pudding—a compound suited only to the stomachs and the palates of the admirers of Gibraltar rock and treacle—it was all very well for us to sneer at Vatel and his *cardon bleu*, or to laugh out at the ingenuity of the French *artiste* who worked a dinner of three courses and a dessert out of a pair of old boots. The time, however, for glorying in the species of ignorance in question is gone by. For generations and generations every little wayside inn through France possessed infinitely better and more scientific cooking apparatus than our great establishments, where a huge open fire-place, surmounted, perhaps, by a clumsy smoke-jack—the maximum of fuel, of course, supplying the available minimum of heat—was the all in all destined for roasting, boiling, and broiling. A walk through the kitchen furniture of the Exhibition will show that we are making advances to more sensible arrangements. In the construction of the grates, the greatest attention is being paid to the obtainment of the largest amount of heat from the smallest amount of fuel. This heat is frequently so managed as to be capable of ingenious application to the very many various operations of which civilised cookery consists, and the economy of space obtained in these arrangements is, in almost all cases, well worthy of notice. According to the good old plan, dressing a dinner, if we exclude chops and steaks, meant the roasting or the boiling of a huge mountain of meat; and, accordingly, hours generally elapsed at any hotel at which you alighted, that is, if you did not chance to hit the canonical meal hours, ere you had a chance of obtaining beyond cold, or partially cold, meat. Not so in a French house. There, in a quarter of an hour, thanks to their superior cooking apparatus, and their disabusal from the superstition that there cannot be a dinner without a joint, you had and still have a snug little meal tossed up; the half-a-dozen or even perhaps greater number of tasty savoury dishes of which it is composed, prepared, and served hissing hot, before greasy Betty would have had the huge unprofitable kitchen fire raked up and glowing, for the Mont Blanc of beef which formed her notion of a dinner. It is gratifying to observe among the large ranges and the apparatus for great kitchens shown at the Exhibition, that a number of cooking-stoves for cottages, possessing in miniature nearly all the requisites of the more extensive machines, are also exposed. The economy of fuel attained by these is very remarkable, and it is none of the least recommendations of the new style of cooking apparatus in general, that by means of it a dinner can be dressed up, as it were, in a corner of the kitchen, without fuss or mess, or the necessity for a red-faced and perspiring cook toiling like a salamander over a blazing fire. All sorts of savoury stews and fricassees, all sorts of generous and esculent soups, all sorts in fact of what are called "made" dishes, can be prepared by these new cooking machines, with far less expenditure of time and trouble than one solitary joint would demand underthe old "plain cook" *régime*. It was absolutely quite comforting to those who, like sensible Doctor Johnson, mind their stomachs very studiously, to compare the immense collection of ingenious ranges for roasting, boiling, broiling, stoving, stewing, baking, and so forth—all compacted with the neatest ingenuity—and mentally to compare them with the old open kitchen grate; the two styles of thing bearing the same resemblance to each other as the modern lighthouse, with its reflectors, bears to the ancient beacon of a cresset of burning coals.

So much for the kitchen. Let us ascend to the dining-room. Here the table first claims consideration. The article being one of those not destined or available for show, there are but a few exhibited, and we have one fault to find with them all. They are circular—certainly the best shape for a small, or even a moderately large dinner party; but the feet, when there are more than one, or the central claw and its appurtenances, are almost invariably arranged so as to prevent the guests, or, at all events, one portion of them, from stretching their legs under the mahogany with anything like comfort. This is a serious fault. Our great upholsterers are so given up to the charms of carving, and what we may call *flamboyant* wood-work, that, in the greater number of the dining-tables, the space which should be sacred to the feet of the guests is trenched upon by all sorts of humbugs of graven images, very well executed in their way, but quite out of place beneath the hospitable board. A dining-table ought to be supported by a firm central claw, symmetrical, of course, but aiming rather at strength than beauty. It is not expected that the guests will pry beneath the table-cloth; and, if they did, it would be in very bad taste to be gratified by wreaths of carved flowers and cornucopiæ of mahogany fruit piled in such a position. There is one circular dining-table, or, if not quite circular, polygonal, which, by an ingenious contrivance, can be, as it were, magnified to, we believe, double its primary surface, the pieces of which it is composed being capable of extensive sliding out, while fresh leaves are introduced to the centre. The cleverness of the contrivance appears to be the exact proportion which can be instituted by a mathematical host between the size of his board and the number of his guests; the table, indeed, being to some extent the converse of the Oriental carpet, which was filled comfortably by four persons, and not a bit more crowded by four score or four thousand. The workmanship of this, as of all the other tables which came under our notice, is perfect; but we repeat, that the central support is by no means well managed. The expanding table is exhibited by Mr. Tubbs. Another very ingenious, and we believe novel, dining table is shown by Mr. Calder, of Bath. It is circular and circulating—in other words, about fifteen inches of edge or margin are immovable, as in the case of an ordinary table. The inner circle revolves on its own axis, two or four polished pegs giving the *point d'appui*—so that the contents of the board may be successively presented to all the guests. The apparatus, however, we presume, is only to be employed after the removal of the cloth, to "push about the bottle;" and, on festive occasions, when there glittered a goodly display of decanters and magnums on the board, the contrivance would no doubt be felt convenient, and would have the effect of preventing unnecessary agitation of the wine. Altogether, there is ingenuity and cleverness in the table.

Side tables or *buffets* certainly form appurtenances to the dining table. They have, as articles of furniture, been already described; and if we were to hint at a pervading fault, it would be that the slab of available space is often too narrow for the size and importance of the article. This is especially absurdly the case in the present French *buffet*, and that this slab is not always placed high enough, considering that the persons making use of a sideboard do so upon their feet, and not seated.

Closely connected with the table, comes the table-cloth. One can hardly, indeed, conceive dinner without the accompanying damask. A meal without a table-cloth, might be a meal, a consumption of food, a guzzling of fish, flesh, and fowl; but one could hardly term it a dinner. A book without boards, a picture without a frame, a man without a shirt, is hardly a more unfinished and pitiable object than a dinner table without a table-cloth, or even a dinner table with a dirty one. As nothing is more appetising and agreeable to the eye than what the French call the *éclatante* whiteness of silvery damask, glittering with its well-arranged masses of silver, steel, and porcelain, so nothing more hideously overthrows all one's anticipations and associations of dinner than the cloths too often to be seen in our ordinary taverns—yellow with splatches of mustard, ringed by the wet bottoms of pint-pots, and emblazoned by dashes of the richest brown gravy. In France they manage these things better. The linen, table and bed, is perfection—white as unsunned snow—glancing and gleaming like ice in its glossy purity of brightness. The peculiar cool, glazed effect of fine damask is strikingly perceptible as you enter the regions apportioned to the specimens sent from the north of Ireland, and the banks of the Firth of Forth. There is a dim greyness in the hue of the stuffs, which, of course, will wear out with washing; but their fabric and texture are exceedingly fine, and, what is of importance for a table-cloth, stout and strong. Almost all are worked with appropriate patterns. Some have been made for Royalty, with suitable devices, armorial and otherwise. Others have been decorated with adornments in harmony with the general purpose of their manufacture, and more or less representing and developing the idea of good cheer. The general and the natural shape of these embellishments is that of a grand circular or polygonal ornament for the centre, and a broad fringe of similar device work, extending, as it were in pinnacles, towards the middle emblazonment. A Dunfermline firm exhibits a satin damask, as a dessert-cloth. The texture is fine and glossy, and the article will commend itself to the pursuers of the new practice of not bearing the table after dinner. Napkins are displayed in considerable variety. These articles, universal in France, are hardly yet sufficiently naturalised amongst us. Over the Channel they would as soon think of giving you dinner without a plate as without the artfully folded diaper. Here, unless the occasion or the establishment be one of some pretension, you are left to wipe your fingers where and how you can. The napkins exhibited in the Crystal Palace are so arranged that a set generally goes with each large table-cloth—the devices, armorial or emblematic, corresponding with those in the larger article.

Our table being now prepared, and the cloth laid over it, we proceed to what is usually laid upon that. And, first, the article of plates and dishes. For how many years, we wonder, did that abominable willow pattern rule it with a despotic sway over breakfast and dinner services? For how many years did people puzzle themselves over those inevitable joss-houses, that eternal bridge, with its eternal three passengers, bearing three eternal burdens on their backs? How long did that Noah's ark-like boat sleep upon that painted ocean, with its solitary fisherman, bending over the bow? How many generations and children have puzzled themselves as to what might be the probable taste of those preposterous fruits, growing out of those preposterous trees, and as to what might be the nature and name of those monstrous birds, bigger than Sinbad's roc, kissing each other in the clouds. For how many cycles, indeed, was that preposterous gem of Chinese art—that ineffable climax of no meaning, no judgment, no taste, and no sense—associated with the roast beef, the boiled mutton, and the plum-pudding of old England. The willow pattern was inevitable—unavoidable. It was like the Irish-

THIS SHEET WAS PRINTED AT THE GREAT EXHIBITION.

man's lark, it was everywhere. It stared up at you from every good man's feast; it dotted with hideous circular pictures every good man's table. There was a spell upon the people—they were slaves to the willow. The pattern appeared to be what the British Constitution was declared to be, unimprovable and impregnable. People took it as a matter ordained by the Fates and confirmed by the stars. The other decorations and appointments of the table underwent gradual improvement. Silver forks displaced steel prongs; dishes and dish-covers were made at once more elegant and more convenient, but for a greater number of years than we care to confess, the willow pattern stood stanchly out. People thought beef would not taste like beef, or mutton like mutton, unless devoured under the sanction of the joss-houses and the big birds, and hallowed by the fisherman in the Noah's ark, and the three everlasting traversers of the bridge. Happily, the spell is now burst, and the willow pattern is departing to the limbo of all the humbugs. For some time a series of designs took its place, which were only one degree removed from the art of John Chinaman. We ladled our soup or placed our chops upon representations of a brave meadow, with a brave gentleman in a long-tailed blue coat, and trousers very wide about the legs, accompanied by a lady with a parasol, and a little girl, Sarah, or a little boy, Bill, taking a wholesome, constitutional, and domestic walk. Contemporaneously with this brilliant effort of art were manufactured those ugly large white plates, with blue wavy rims round the edges, which were common in all country places, and hawked about by all the wandering emissaries of the ragmen, whose business it was to exchange coarse crockery against fragments of old linen and woollen. A still purer taste is now happily in the ascendant—the porcelain and stone ware department of the Exhibition displaying a series of handsomely designed and richly coloured plates—the patterns not, indeed, quite reaching to perfection, but an enormous improvement over the ancient style.

In dishes, too, we are making progress, particularly in all that relates to the important matter of gravy. The old affair was a mere clumsy oblong plate, which the carver tilted up at one end so as to get a temporary pond of gravy in the other. The first improvement was to construct a well at one extremity of the dish in which the savoury fluid collected. Then little channels or ditches were made in the stoneware or porcelain to conduct the liquid more readily to its destination. Then came a recent and an ingenious device for separating the pure, legitimate, and orthodox gravy, from the impure, illegitimate, and heterodox fat. Two wells were formed side by side. Into one, the shallowest, fat and gravy ran as of yore. The edge of the other was defended by a raised ledge or rampart, which prevented any unauthorised incomings, while a small hole of communication between the two wells allowed all the pure and really liquid gravy to flow from the unguarded shallow to the guarded deep receptacle. Specimens of this simple and ingenious contrivance are to be found in the Exhibition, both in metal and stone-ware. Metal, indeed, since the invention of those cheap substitutes for silver which Birmingham and Sheffield now pour so freely forth, and which really, with ordinary care, will long look just as like the real thing as Mr. Apsley Pellat's Koh-i-noor is like the old original stone—metal dishes are coming greatly into fashion, particularly for serving up the smaller class of made meats, stews, *fricassees*, and so forth; and a common arrangement is, by making the handles of the covers removeable, to allow of the latter being converted into smaller dishes themselves. The covers in question, not having to adapt their proportions to the unwieldy masses of meat which form the *pieces de resistance* of our dinners, are far more elegant in form than the covers adapted to the larger "ashets," as the Scotch call them, on which we enthrone our joints and sirloins. No great improvement, indeed, is to be expected in the latter; but the tendency is to an approach to the conical shape, a more elegant and gracious one than the huge ugly bulge which dish-covers too often display. The French exhibit some metallic dishes for fish, adapted to the size of a salmon or large pike—an arrangement which seems sensible enough; but we were disappointed in not observing dishes of this kind with perforated slabs for the fish to lie upon. Fish ought never, except when dried, to be served without them. Germany has sent some specimens of her peculiar fish dishes, with uncouth representations in the brownish stoneware of the creatures destined to lie above them. These affairs are rank monstrosities. We have seen a fish "ashet" in Germany, heaped, as it were, with a mass of sick and mangy-looking pikes and perch, which was enough to have ruined the most promising appetite which ever nursed itself for dinner. Tureens afford great opportunities for improvement in form. Most of those now in use are no better than stoneware or porcelain tubs or pails; but we noticed some handsome and symmetrical shapes, both in ware and metal, out of which, we trust, will be distributed many a spoonful of rich and highly-flavoured vegetable soup—the only species which, west of Temple-bar, or east of Aldgate-pump, ought to be admitted as beginning a dinner, in civilised society. While talking of the shape of dishes and dish-covers, we may pause a moment to express our regret that the display of jelly and other moulds should be so poor, and apparently so stationary in taste and invention as it is. In the hard were department are whole ranges of the dreary old shapes, associated for the last score of years with creams, blanc-manges, and calfsfoot jellies. The same antiquated imitations of elephants, the same dumpy mounds with buttons all round the summits, the same old piles of angles and knobs and shapeless pinnacles which gave their shape and symmetry to the masses of amber-like jelly or stiff white cream so dear to our childhood's unsophisticated, or, to speak more sensibly, uneducated taste, again greeted our eyes—not a step in advance, not an atom of taste or invention. We do not say that the pastry-cooks and confectioners have not improved in this respect very notably, but the makers of the metallic moulds in general use, for the ordinary purposes of the kitchen, have certainly not extricated the wheels of their chariots from the old ruts.

We looked in vain, also, for some novelties or improvements in the metallic drinking-cup and tankard way. One rather ingenious measuring quart there certainly was for frothy porter. The walls of the vessel extend considerably higher than the line which marks the boundaries of the imperial quart—boundaries which are, however, signalised by a hole, out of which the beer runs when the proper quantity has been introduced, the froth having nothing to do with the matter. "The method," says the exhibitor—and we agree with him—"is better than blowing." But why not have some handsome pewter mugs or tankards for malt liquor? The fact is undoubted, that porter and pewter go excellently together, and that there is a certain smack and flavour in the liquid, when imbibed from the metal, which does not follow the process of drinking from glass. All our pewter goblets, however, are mere public-house measures, and their appearance, when they do appear—generally battered, scratched, and dirty—is reckoned to be anything but complimentary to the style of living of the house. Whether pewter or silver, however, the tankard is the natural receptacle for beer. The froth looks noble, curling up the glancing metal; and in these days of Britannia silver, nickel silver, and the scores of silvers which are declared by their inventors to be little, if at all, behind the real thing in any one of its qualities, we should expect to see some taste and ingenuity lavished in the construction of suitable, characteristic, and elegant vessels, to be devoted to the consumption of our national *vin du pays*.

Knives and forks are important appurtenances of the table, and one in which the last few years have seen marked improvements. We looked attentively for that absurdity—anciently of tolerably common occurrence—a two-pronged fork, and only discovered one set, in Austria, and abundantly rude and coarsely made they were. The black wooden-handled abominations have also been tolerably well routed out of the land; but we are no friends to the rough, knobby, and prickly horn, which, to some extent, seems to have superseded them. The plainer and smoother a knife handle lies for the grasp, the better. The elaborate silver gilt dessert knives, shown in the trophy of the Messrs. Rogers, are over ornamented to an uncomfortable degree. A plain fruit-knife, excellent for some purposes, is one in the Crystal Gallery, made, blade and handle, of blue glass. Rogers exhibits several specimens of the new fish-slice, somewhat like a large butter-knife, and, in our opinion, not half so good or so elegant as the broad old one, by means of which the largest flakes of the largest cod, or a sufficient extent of surface of any thin flat fish, could be conveniently peeled off and deposited on the plate. The old fish-slice with the new fork might be advantageously introduced together. The French show some sensible trowel-like fish-slices, well adapted for the purpose. The dessert knives most to our taste in Rogers' trophy are the plain mother-of-pearl handled ones. They look well balanced, clean, and highly-finished. In the ordinary knives and forks, the productions of Sheffield, Birmingham, and London, there is no very decided feature of novelty. Carving-knives, with a crook in the blade, close to the handle, are useful for cutting slices from a round of meat. They are, however, more common in cook-shops than in private houses. The carving-knives with round points are one and all mistakes, and so, we take it, is the convex curve imparted to the blade of ordinary knives. There are several specimens of these last, the most exaggerated curves occurring in the German knives, wherewith we have often and often been puzzled, while dining in other respects as comfortably as a copious *table d'hôte* and abundance of bright *rudesheimer* could make us. Among the exceptional articles of table cutlery displayed, we may mention knives and forks for very young children, about half the size of ordinary dessert articles, and carving utensils, with handles of deer horn and roe legs—apparently for the use of shooting lodges, and for sylvan entertainments. Then there are bread knives, with broad convex blades, and knives for operating upon various small dishes, vegetables, and fruit—not forgetting pickle knives and onion knives. Most of the steel forks now made are four-pronged, and, of course, the greater the number the better; but silver, or imitation silver, will soon carry all before them. These have already spread rapidly into ranks who never before aspired above steel; and certainly the Ettrick Shepherd—if his lot had been cast half a century later—would never have mistaken the first silver fork he saw for a split spoon. The French cutlers, aware of the principle that knives only cut by imperfectly sawing, have sent some carving-knives which are, literally, very minute saws, and which are said to retain their edge better than the ordinary knife. They have also despatched an oyster opening tool, in which a squeeze given to a pair of pincers drives—without remedy and without risk—a guillotine-looking knife between the valves and cartilages at the back of the shell of the astonished native. The third novelty in cutlery from beyond the water is a carving-knife to be used for the dissection of fowls, and which is furnished with a sort of shorter supplementary blade, which, when the joint is not happily hit, can be brought to the rescue, and the bone snapped through by both blades acting in the fashion of a powerful scissor. The superiority of our table cutlery over that of our neighbours is, however, very marked; and the Germans, although they certainly often play a good knife and fork, have as assuredly very little skill or knowledge in the theory and the art of making them.

In the matter of ornamental centre-pieces for dining tables, we are decidedly improving, and we are inclined to think that the extended use of crystal—a more beautiful material than even silver—will not be without its effects in this respect. It is not every body who has the taste to wish for a stately central *épergne* to his table, who can coolly give the silversmith an order; but crystal, at a tithe of the price, will be very handsome, and—rising among the glasses and decanters around—perfectly in harmony with the furnishings of the board. One elaborate piece of table adornment of this description, however, deserves some notice. It is called a dessert plateau, and consists of an elaborate piece of branching silver plate. Each branch supports a crystal dish for the dessert; and after the cloth has been removed the branches in question lengthen out nearly to the extent of the circumference of the table, and can then be whirled round and round, carrying their burdens of dry fruit or preserves to each successive guest. In the Glass Gallery there are many very handsome massive and brightly sparkling crystal vases, *épergnes*, and chandelier-like structures, which would make cheap and beautiful dinner-table ornaments. Wreaths and clusters of flowers look just as well, if not better, blooming over crystal than silver. Our glass manufacturers have made immense advances within the last few years. We may not be yet up with our Bohemian neighbours in forming the requisite curve of a vase, or in blending with the glass those exquisite colours by means of which they make their urns and amphoræ look like vast precious stones cut out and scooped; but, in the art of piling up symmetric structures of purest crystal, glistening like so many masses of coagulated diamonds, we may safely back our own artisans against the world. We shall be much disappointed if crystal centre-pieces do not speedily come into vogue at the tables of all who love their eyes, and their sense of the beautiful as well as their palates and their sense of the comfortable, duly gratified.

Our few remaining notes may be condensed into a sentence or two. Tea-urns, except in very large families, have of late become somewhat *rococo*; but, to judge from the number exhibited in the Crystal Palace, the taste is coming up again. Some of the articles in question are shaped with really classic grace and symmetry, and there is a general advance over the old bulky globular form. Tea and coffee-pots offer, so far as we observed, no very material feature of change. The little silver strainer hung by the French from the spout of the teapot to intercept any stray leaves in their passage into the cup is hardly requisite in well and deliberately made tea. *Papier maché* has it all its own way as far as regards tea-trays and teaboards—a result with which we shall be the better satisfied when we see something like taste introduced into the glaring and staring designs at present most in favour, and something like a more subdued and less meretricious style adopted in the colouring. Still, however, with all our remaining faults, we have got rid of more and less pardonable ones. Our table services are daily improving, daily becoming better adapted to their uses, and more agreeable and harmonious to the canons of taste and art. Steel forks, willow-pattern plates, crockery ladles, and wandering vessels from the cruet stand, are daily becoming less common. Dish-covers are becoming more artistic in shape; dishes themselves are being adapted to other purposes than being mere platters for lumps of meat; the whole paraphernalia of glass is advancing with giant strides; and the result is, that a "laid out" table is now, in the majority of cases, infinitely more creditable to national taste and national industry than it was a score of years ago.

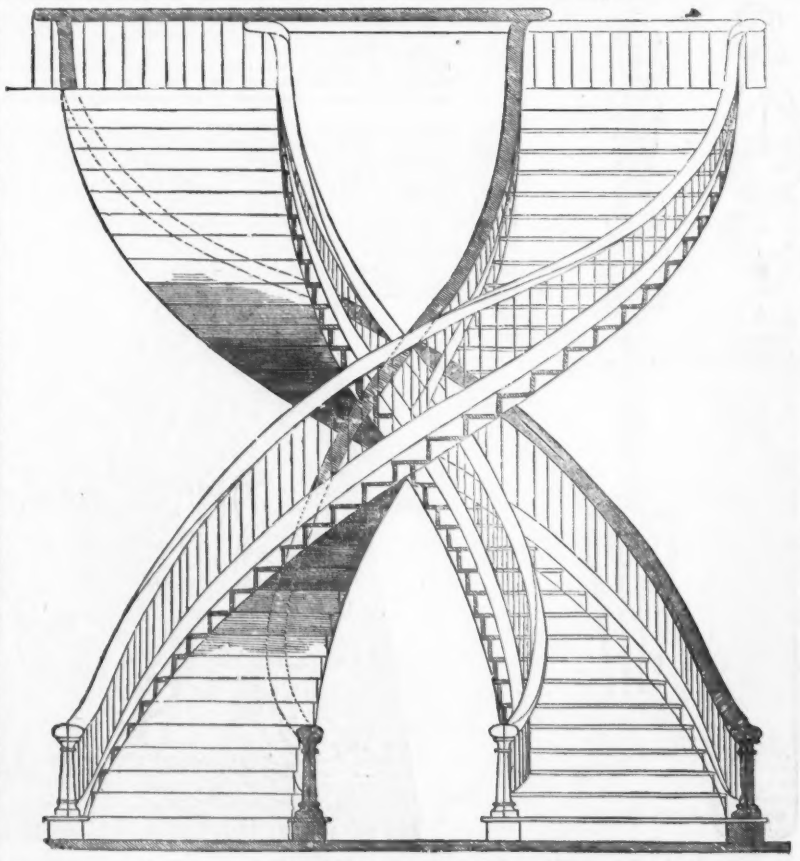
GOTHIC TEA-SERVICE.—BY MESSRS. LIAS AND SON.

GOTHIC TEA SERVICE. BY LIAS.

The silver Tea Service, by Lias, which we engrave, is a capital specimen of sensible, serviceable plate. The pattern, which is of Gothic style, is pleasing, gratifying the eye more by the judicious variety of the outline and surfaces, than by a resort to appended decoration. This is the style of art in which our manufacturers should strive to excel in objects of daily use, rather than in the loading of ugly or commonplace foundations with unmeaning frippery.

BANKS' TWIN STAIRCASE.

Mr. Banks has erected in one of the north-west avenues of the Nave, a double or twin staircase, which, communicating with the gallery above, is daily made use of by the public. It is placed here as a specimen of what may be done in a small space, there being here two staircases, one for parties ascending, the other for those descending, in the area or space, which would be devoted to one flight under the ordinary method of construction. This contrivance is considered particularly adapted for cabins of ships, picture galleries, show-rooms, and temporary erections, where a great influx of visitors is likely to attend; being capable of being put up at short notice, and at comparatively small expense. The principle of construction is very simple, being merely an adaptation in extreme limits of the well-known properties of the spiral curve, or springing arch. The ascent is necessarily steep, there being no less than thirty-eight steps in each semi-circular flight, the diameter of the plane of which, probably, does not exceed 12 or 15 feet, whilst the height is 23 feet. The length of the step is four feet, and the length of the outer string-board, 37 feet. Each flight lands on a circular corridor, which intersects two of the galleries of the building at right angles with each other. The rails are continuous ones, so that a person ascending and placing either hand on the rail may continue with the same on the rail during the ascent, all the way across the corridor, and all the way down by the opposite flight. This invention exhibits considerable ingenuity, and is likely to be extensively useful.



BANKS' TWIN STAIRCASE.

BARRETT AND CO.'S BISCUIT MACHINES.

Messrs. Barrett, Exall, and Andrewes, of Reading, contribute numerous machines to the Agricultural Section of the World's Gigantic Fair; but their productions are not confined to that section only, for we find some contributions from their works placed among the Machinery in Motion: the principal of these is a set of machines for performing the various processes of biscuit-making, which are chiefly kept in motion by a very small Brunel steam engine, having two inclined cylinders, the pistons of which are connected with one crank. The small engine stands on a table, and by a gut-line from a wooden drum attached to the fly-wheel, motion is communicated to a metallic pulley placed below the table. From this pulley a band passes to another pulley, on the axle of which is a small bevelled wheel rotating in a vertical plane, the teeth of which work into the teeth of a horizontal wheel placed centrally below the kneading trough; the vertical shaft of the propelled wheel is attached to the trough, and causes it to rotate with it. The flour, water, and other materials having been placed in the trough, the mixing is performed by the whole mass passing under a grooved roller of great power, which is attached to a beam running above the trough. When sufficiently mixed, the lump is transferred to a hand-break roller, or crushing machine, which consists of a flat table with an inclosed back-board, having rollers between which the dough is passed until the kneading process in entirely completed By adjusting rollers, it is reduced to the required width and thickness, and is then pressed in a continuous sheet by means of an endless canvass, to be cut out by a hand-press into the required number of properly-shaped biscuits, and also to receive the proper affix or stamp to show that they are Reading made biscuits.

NEW PATTERN FOR DINNER PLATE. BY FELL AND CO.

The first Illustration on the present page is a pattern of a new Dinner Plate, of common earthenware, contributed by Messrs. Fell and Co., St. Peter's Pottery, Newcastle-upon-Tyne. It was devised at the Newcastle School of Design, and is called "the cinque-cento Queen and Prince Albert pattern." The ornamentation is very beautiful *per se*, Italian in style, the scroll-work of the rim being extremely light and graceful. The decorations of the centre are highly ambitious, and are finished with care; but we doubt if they will ever become so popular as many old patterns. The eye should not be tasked to a too critical observation of details, in a vessel of daily requirement, more particularly when its use is to minister to the craving of another organ of sense, whose claims for the moment should be paramount. Nevertheless, we would by no means discourage the enterprising spirit which has led to the production of this very elaborate piece of composition; the same industry and expense applied upon a simpler subject may be happier in its results. It remains to be added of the colouring, that the ground of the circular parts is vermilion, and painted by hand; in other respects it would not be a costly article.

NEW PATTERN FOR DINNER PLATE.—BY J. FELL AND CO., NEWCASTLE-UPON-TYNE.

PORCELAIN AND EARTHENWARE FLOWER-STANDS.—BY SMALL AND MALING, NEWCASTLE-UPON-TYNE

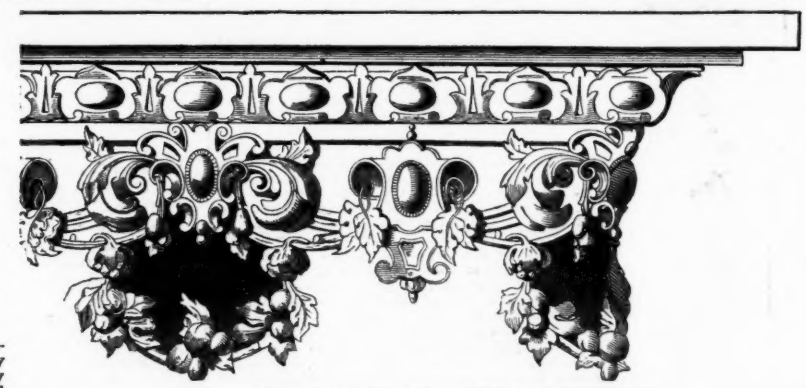
KNIFE, FORK, AND SPOON. BY LAMBERT AND RAWLINGS.

Whilst Messrs. Fell and Co. try to improve our appetite for dinner by the introduction of a new plate, Messrs. Lambert and Rawlings present us with a knife, fork, and spoon, of novel and fanciful device, emblematic respectively of fish, flesh, and fowl, three out of the "four elements" (vegetable alone being unprepresented) of which the humblest repast and the most *recherché* combinations of the *cuisine* consist. They will bear and repay inspection—between the courses. Messrs. Lias also exhibit a specimen of table plate of a simpler fashion, ornamented with a handsome scroll, and which they consider may form an acceptable substitute for the old "fiddle" pattern.

BRASS CURTAIN CORNICE. BY WHITFIELD.

Messrs. Whitfield, of Birmingham, have carried the art of stamping brass for curtain cornices to a very high point of excellence, and exhibit great taste and fertility of invention in the designs which they apply to it. We give two very elegant samples, one of grapes and vine-leaves, the other a handsome scroll pattern, with fruit and foliage introduced.

BRASS CURTAIN CORNICE.—BY WHITFIELD, OF BIRMINGHAM.



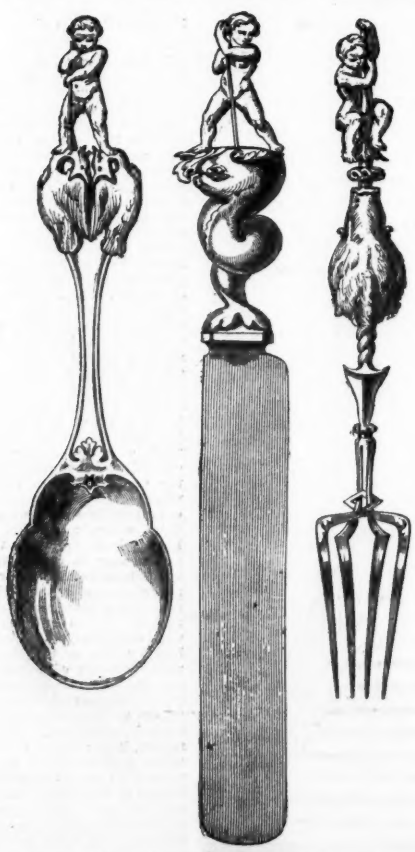
CURTAIN CORNICE.—BY WHITFIELD, OF BIRMINGHAM.

PRIEST'S COPE. BY VAN HALLE.

The sixth Illustration in this page is one of numerous specimens of lace and gold embroidery, for church ornaments, manufactured by Van Halle, of Brussels, which we insert as a curiosity of patient labour; the cope in question, with two other articles, which with it form a complete set of vestments, having been, we are informed, seven years in the workmen's hands. The whole of the embroidery is first completed on separate pieces of cloth, which are then sown upon the different vestments, whereby the work is rendered much more solid and durable.

PORCELAIN AND EARTHENWARE FLOWER-STANDS. BY SMALL AND MALING.

Two very creditable specimens of British manufacture. They are both designed by Mr. T. Small. That on the right is in biscuit ware, and was produced at Mr. Maling's pottery; the other is in fire-clay, manufactured by Mr. Addison, potter, of Wellington Quay, Newcastle-upon-Tyne. The former material, although beautifully white, is not serviceable, except for articles of luxury of which great care can be taken; fire-clay, on the other hand, is a substitute for stone, and will stand the same rough usage. These productions are about three feet and a half high, and have a very handsome appearance.



KNIFE, FORK, AND SPOON.—BY LAMBERT AND RAWLINGS.

PRIEST'S COPE.—BY VAN HALLE, OF BRUSSELS.

SPOONS.—BY LIAS.

WALNUT-WOOD CABINET. BY JEANSELME.

First is a very elegant Cabinet, by M. Jeanselmé, of Paris. It is in walnut wood, richly ornamented, but not overloaded with decorative effects. The general style is based upon the *Rénaissance* period—a school very much followed, with some modifications, in France at present.

WALNUT-WOOD CABINET.—BY JEANSELME.

PRIE DIEU. BY LEISTLER.

At the opposite side stands a Prie Dieu, by Leistler, which attracts much attention in the Austrian bed-room. It is very richly carved, and in the central panel is a painting of Christ bearing the cross; on either side are angels holding tablets, on which are inscribed, the date, "Anno 1851."

At the bottom of the page is a Corner Pedestal, by the same, handsomely carved, though not quite to our taste in the design.

BRACKET IN CARTON PIERRE. BY GROPIUS.

Between these two articles is a bracket in *carton pierre*, or "stone paste," one of many works for decoration of apartments, churches, &c.,

BRACKET.—CARTON PIERRE.—GROPIUS.

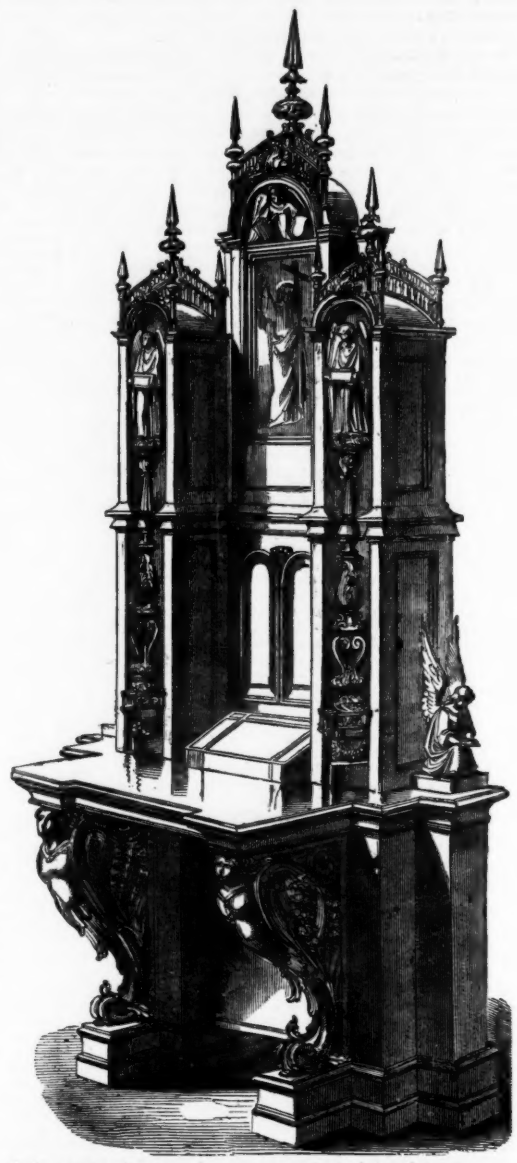
exhibited by Paul Gropius, of Berlin. These specimens are in great variety of subject and treatment, and are very satisfactory in matters of purely decorative character. With the subjects of a higher class, as statuettes, the producer is not so successful; the style of moulding being somewhat hard and clumsy, and the edges wanting that lightness and sharpness which are the beauty of sculpture. In the specimens here produced, we have a group of heads, a deer and dogs, &c., and it would have been better if it had been kept of the colour of the material, instead of painted to imitate wood.

WALNUT-TREE COUCH. BY JACKSON.

The Couch by R. Jackson is a piece of furniture, with some originality of design. The back, of walnut-wood, is divided into three portions, each richly carved, and upon which the three national emblems, the rose, the thistle, and the shamrock, are represented.

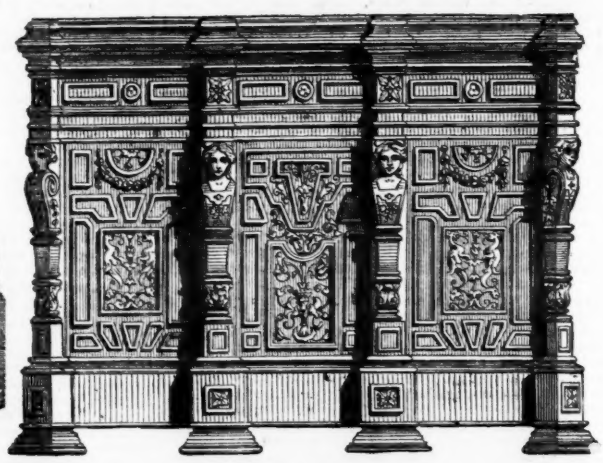
COMMODE. BY VAN BALTHOVEN.

The Commode by Van Balthoven is a very chaste specimen of carving and ornamentation—somewhat of the Romanesque style.



PRIE DIEU.—BY LEISTLER.

WALNUT-TREE COUCH.—BY JACKSON.



COMMODE.—BY VAN BALTHOVEN.

SILVER CASSEROLE. BY GUYTON.

The Silver *entrée* Casserole, by M. Guyton, is of quaint design, and thoroughly French. The workmanship is very beautiful.

INLAID TABLE. CEYLON.

The last Illustration in this page is a Table from Ceylon, of ingenious manufacture, being elaborately inlaid with upwards of fifty different coloured woods, ivory, tortoishell, &c., and has a very pretty effect.

CORNER PEDESTAL.—BY LEISTLER.

SILVER CASSEROLE.—BY GUYTON.

INLAID TABLE, FROM CEYLON.

ARMS AND ARMOUR.

THE proximity of the Crystal Palace to the barracks over the way has furnished to more than one lover of the human race abundant scope for peaceful expatiation, a fertile theme of edifying comparison.

The sombre, ugly parallelogram of brick, with black dismal walls and sooty front, and little pigeon-hole windows, through which peer, with melancholy glance, a row of disconsolate-looking warriors, *en déshabille*—tall men of iron frame, strong of muscle, hale of limb, torn from the peaceful labours of the factory or field—toiling in profitless evolutions and senseless drills—pipe-claying of leather straps and polishing of guns; living in continued exposure to the military dangers of blank cartridge popped off in Hyde Park reviews—dying, at last, from sheer *ennui* of their melancholy lot. The prison-like court-yard, which reverberates all day long with clattering hoofs and trumpet calls, rattling of carbines and words of command; these, and many other accessories of military life—true or false, real or feigned—not omitting vague shadowings forth of triangles and the lash, have been invoked, conjured up, ranged in order, marshalled all of a row for the purpose of illustrating, by vivid contrast, the hideous aspect of cruel war with the peace-breathing attributes of the crystal fane hard by!

At least a hundred sermons have been preached to this theme in the metropolis alone; and peace promulgators have lectured upon it to exhaustion. Let us, then, see to what extent these utopian lucubrations are based upon truth.

We need not wander far within the circuit of the crystal walls, to be convinced how absolutely devoid of truth is the contrast in a warlike sense, which the friends of peace would so beneficently draw.

No sooner, entering by the eastern portal, do we stand under the banner of stars and stripes, than a whole galaxy of patent revolvers meets our view. Then there is the wounded Indian, with arrow mark in his breast; and there are India-rubber pontoons for floating munitions of war across rivers and creeks; and a little way further on, in the region of the Zollverein, is the magnificent steel cannon of Herr Krupp, polished to the very last shade of art—brilliant as a mirror, the very coxcomb of great guns. Yet a little way further on, and you see another emblem of peace and quiet, in the shape of the celebrated Prussian needle guns; and French *à bascule* muskets, with their steel-tipped bullets, and perforated iron plates through which bullets have crashed; *pistolets d'honneur*, to go off without powder; *pistolets de salon*, by aid of which, in rainy weather, the young Parisian idea may be taught to shoot without the necessity of exposure to wet. Then, in Spain, we see the destructive element well represented by a goodly array of trenchant Toledo blades; and a modelled bull-fight, true to the life, displays to us the gentle pastime so dear to the Madrilenas, and sets us speculating on the reason why ladies, whose eyes sparkle and whose bosoms heave with savage joy at the mingling of human with brutish blood, in the bull circus of Madrid—will weep their lustrous eyes dim over the casualty of a stranger gored in the streets by an ox! There are guns mounted in the Spanish fashion, too, with locks on the outside—and pistols richly decorated with arabesques.

Well, the destructive tendencies of our species are tolerably represented in this Palace of Peace; and not least of all in a display of goodly weapons of war, serviceable life-dissipating agents, worthy the inventive genius of man.

But these are emblems of a transition state of mortal affairs, the peace-makers will say; "base, foul, dishonourable engines, to be banished from the world as education extends and man grows wise." Indeed, we doubt it much, and are disposed to think that destructiveness is a sentiment deeply grafted in mortality—not to be banished, but refined.

Glance yonder at that magnificent creation of the Berlin sculptor. Mark that fierce and truculent wild beast, with jaws wide-spread and glaring eyes, tearing with gory jaws the frenzied steed! The lion revels with savage pleasure in *his* work of death—the lust of destruction is strong in *him*. Mark, too, the Amazon with high uplifted hand and trembling spear, aiming her fatal thrust: the savage pleasure of destruction is strong in *her*. Why, the group breathes with death—destruction—the very elements of war. yet we would lay a Colt's revolver against a pop-gun, or any other unequal wager you like, that the veriest man of peace who ever lived would not fail to recognise a something in that group, a sentiment—he knows not what—making his pulse beat quick, his heart grow turbulent. Yes, veil as you will, it is the luxurious sentiment of destruction—the grim excitement of killing—the pleasure of inflicting death! Ay, there it is, deep grafted in our natures, and displayed in various ways, from the urchin who strips butterflies of their wings, to test their pedestrian powers, and the Cockney who shoots sparrows on Hampstead Heath, to Captain Gordon Cumming, who wages war against elephants and hippopotami, beards lions in their dens, ties knots in boa constrictors against their will, runs down ostriches on foot, and plucks feathers from their tails; it is the excitement of destruction all; which proposition if granted, it will be conceded, we presume, that the culminating point of this tendency—the point at which the luxury attains its maximum development—must be the killing of men. Ay, to be sure, and mothers yet shall send their sons to be killed for their country's sake—wives their husbands, sisters their brothers. Damsels shall still admire the panoply of scarlet coats; and country bumpkins shall stand erect, prick their ears, and grow valiant at the dull vibrations of a strained donkey's skin. War, depend upon it, will go on!

Thus, man being demonstrated a fighting animal, we trust it is quite unnecessary to point out the great privilege conceded to him of fighting his battles in civilised style. For the brute, there are only teeth, and claws, and hoofs; but man accomplishes his work of destruction by resources the most scientific and refined. These, so far as they are illustrated by the Glass Palace, we will now proceed to describe.

The *genius loci* of the Exhibition is inimical to any kind of accurate classification. People don't go there to study, but to be amused. If amusement brings instruction, all the better; if not—why instruction may wait until another day. Do you require proof of this proposition? Go into the lecturing theatre, and see how many people are there.

All accurate classification of arms and armour, then, we mean to avoid; but one classification of a rude kind, familiar to the meanest capacity, as the spelling-books say, is this: arms we shall call offensive, armour defensive; although both are sometimes designated under the general name of arms. As regards arms, the very natural sub-division exists of arms used for close quarters and arms employed at a distance—the latter being usually denominated projectiles. Now the subject of arms to be employed at close quarters is far less interesting than the subject of projectiles, as indicative of a less refined, less intellectual condition of man.

Treating the subject according to its development, we have first to direct the inquirer's attention to the carved clubs presented to the exhibition from Australia, New Zealand, and certain other equally civilised lands. Clubs are, perhaps, the simplest form of all offensive arms, and one might suppose they would have vanished from the equipment of warriors who had the means of acquiring cutting and stabbing weapons. We find, however, the reverse to be the case; war maces continued to be used by knights and their men-at-arms up to the very last days of chivalry, and their disuse may be said to be coëval with the general introduction of fire-arms and the abandonment of coats of mail. Indeed, mere cutting or stabbing weapons were of but little use against the defensive armour of men-at-arms. The lance—the favourite weapon of Norman chivalry—should rather be regarded as an instrument for unhorsing a rider than for penetrating the well-tempered metal of his poitrinal; against such a tortoise-like defence the battle-mace was possibly the best weapon of attack that could be used, though, generally speaking, the death stroke was usually given by the dagger, or *misericorde*, which, so soon as the knight was unhorsed, and sprawling on the ground—being gently insinuated into the undefended space in the neck, where the helmet and the corselet joined, completed the work of death.

The use of the battle-mace was extended, too, by reasons of a religious kind. The clergy were not limited in times of chivalry, as now, to do battle with their tongues. They turned manfully out in field of battle to fight like other men. They were not permitted, however, to shed blood, and so the lance, and sword, and dagger, or *misericorde*, were to them unholy weapons. They were limited to the use of the battle-mace—an instrument which, we have not the least difficulty in understanding, dealt, when wielded by their brawny arms, blows of a truly orthodox kind.

Whilst on the subject of defensive armour, we are sorry to destroy the romantic idea of danger which ladies are so wont to associate with the idea of the ancient knights. But the heavy defensive armour of those warriors reduced their immediate chances of death far below the limits of probability; and no sooner was gunpowder applied to the purposes of warfare, than those brave men turned themselves into human tortoises of steel and brass, so great was their fear. In several battles about this time not a single knight was slain. When unhorsed it was difficult to penetrate the joints of their armour by the *misericorde*, and at the battle of Fournouë, under Charles VIII., a number of Italian knights having been unhorsed, could only be killed after they had been broken up like so many lobsters with woodcutters' axes. This circumstance justifies the remark of James I., that defensive armour was a double protection, preventing the bearer at the same time from being injured, and from injuring others.

It is curious to mark the effect which the general introduction of fire-arms produced on the system of defensive armour. At first, protection was sought in increased thickness of metal plates—but the force of bullets being so great in comparison with the power of metals to resist, defensive armour was at length thrown away altogether, until re-introduced by Napoleon in the organisation of his celebrated cuirassiers. Our heavy troops, at the period of the battle of Waterloo, had no defensive armour, as is well known; nevertheless, they proved more than a match for their breastplated antagonists; and when subsequently the addition of breastplates was proposed, and a guardsman being questioned concerning his notions on the improvement before a committee of the Lower House, was asked, "How he should like to be clothed if he had to do another day's work of the same kind," very naïvely answered, "That he thought he should prefer being in his shirt sleeves."

Defensive armour has, however, become pretty general for all European heavy cavalry. That it proves a defence against sword and lance, there can be no doubt; but against the modern improvements in fire-arms, concerning which we shall have to treat by-and-by, it will be henceforth totally unavailing. If any one doubts this fact, let him wander into the French compartment of the Exhibition, and regard the effect of the steel-tipped conical rifle balls on a sheet of iron nearly an inch thick.

Diverging from our primary notice of New Zealand clubs, we have found ourselves wandering through many centuries, mixing up traits of men-at arms with sketches of the warlike customs of present times. Crowds of phantom-like visions of war and strife present themselves to our notice, and lay claim to be chronicled by our pen. Time and space, however, debar us from the pleasing occupation; and so we must limit ourselves to two further remarks suggested by our present theme, and then, as Sergeant B. is used to say, "Pass on." *Apropos* of Sergeant B. is our first remark. The crushing instrument of terrible force which he carries in a secret pocket of his nether garb, is the direct descendant of the ancient war mace. Like the ancient clerical warriors, the trained bands of Commissioner Mayne are forbidden to draw blood; which injunction, however, they manage to contravene sometimes. Sundry murmurings of discontent were heard when the honour of the Bath was conferred upon some leading functionaries of the celebrated legion; but even according to heralds' philosophy, the grumblers were wrong. The metropolitan police are, properly considered, our prætorian guards, to whom has been delegated the use of the consecrated battle-mace. What greater proof can there be of the gentle antecedents of this celebrated corps? Then, according to proper heraldry, members of the police force, being *all officers*, should clearly take precedence of the household troops. What greater proof could we adduce of their high social position?

Having expatiated thus far, it may be as well to superadd, that, according to the vulgar nomenclature of modern times, the representative of the ancient war mace is termed a "crusher" which term, by the figure of the part used for the whole, is sometimes applied to a policeman himself. The method of using this weapon is peculiar. Being blunt, one would have imagined its employment limited to cuffs and blows. Not so. The assault consists of two movements, the first being a quick thrust about an inch under the sternum, or breast-bone; the second, a crack on the head. Nothing so simple, so philosophic, in the whole art of warlike attack exists as this. Whilst the antagonist stands erect, it would be difficult to administer a good blow on the head; but the preliminary thrust has the important effect of making him bend instantaneously, and present his pate in a most convenient position to be crushed.

So much for the weapon of the police; and thus we conclude our first supplementary remark. Our second, in connexion with the present division of our subject, is to the effect of pointing out the curious transposition of ideas—mutability of the notions of the fitness of things, by which in ancient times heavy cavalry soldiers exclusively were armed with the lance; whereas, in modern days, this is the favourite weapon of light troops alone. Comparatively speaking, we have no heavy cavalry now, if we regard the nature of equipment of knights and men-at-arms of olden time. Each man-at-arms ought to have five horses, one of which he rode to the charge, and hence was called a charger. The others were used to carry his trappings, and to bear him on the march. Some attempt was made in Germany to diminish this unwieldy retinue, by allowing each man-at-arms only one horse; but, in compensation, a waggon to every twenty men.

Whilst on the subject of weapons employed by the chivalry of ancient times, we must not forget to mention the battle-axe and the double-handed sword. The battle-axe still lingers in the East, and specimens of it may be observed amongst the Indian contributions to our Exhibition; but the two-handed sword is now quite obsolete—banished from the list of weapons of war in favour of swords of lighter make.

The Exhibition is exceedingly rich in the department of swords. Beautiful specimens may be seen in the departments of India, Turkey, France, and Spain, in addition to those of more barbarous make.

No one now thinks of making a sword of any other material than steel; but a great deal of sanguinary work has been done by swords of copper, bronze, iron, and even wood. Copper swords have been found in Ireland, and bronze swords were almost exclusively employed by the Greeks during what is called the heroic age. Homer rarely mentions iron; he calls the Greeks by the general epithet, "brass-coated;" and the word translated by Pope "smith," is in the original χαλκεὺς, worker in bronze; and even when the metal employed was iron (σίδηρος), the artificer is still called the same, a brazier, proving that the two trades were then identical. Nevertheless, iron, and even steel, were known to the Greeks in Homer's time, for he describes the method of tempering a hatchet by dipping it when hot into cold water. This plan of tempering only applies to iron and steel.

Nine hundred years after the epoch of the siege of Troy, steel must have been exceedingly rare amongst the Greeks, as is evidenced by the fact of the Indian chief giving, as a valuable present to Alexander, about thirty pounds weight of this metal. We have no evidence that the Romans, even at the earliest periods of their history, ever used any other metal than iron or steel for their cutting weapons; and the materials for fabricating which they probably derived from Elba or Spain. Nevertheless, for some reason or other, bronze was commonly used by the Romans for non-warlike cutting instruments, up, at least, to the period of the first century of the Christian era. In Herculaneum and Pompeii, those tomb-like records of ancient arts and manners, even surgical instruments have been discovered, formed of bronze.

Turning our attention to Asiatic nations, we do not find any record of the employment of bronze for the manufacture of cutting instruments, Wootz, or Indian steel, having been there employed from the most remote period.

Some of the semi-barbarous tribes, who so frequently did battle with the Roman troops, must have been provided with weapons of a very rude description. The Gauls used iron swords of such bad temper, that, according to Polybius, they had to be straightened under the foot after the exchange of every three or four blows; and in the 222 B.C. an army of Insubrian Gauls having entered the north of Italy, were defeated by the Romans chiefly from this circumstance.

The sword is now, amongst all civilized nations, restricted to the use of cavalry; being found incompatible with the close order in which infantry should march to the attack. The Roman legionary soldiers fought with the sword, as is well known, but their weapon was very short—more like a heavy dagger than a sword, and required no great space for the performance of its evolutions. Among modern tribes, the Highlanders relied greatly upon the sword as an infantry weapon; and a great deal has been said about the good service done by our allies, the Ghoorkas in northern India, with their diminutive swords. Properly speaking, however, these latter weapons are not so much swords as bill-hooks, and there can be no question, that, viewed in all its bearings, the sword is only adapted as a cavalry weapon.

If the observer direct his attention to many of the swords and daggers in the Oriental department of the Exhibition, he will observe that their blades are covered with curious wavy patterns, very similar to those frequently to be seen on the barrels of fowling-pieces, and which, in the latter position, is denominated the Damascus twist. These wavy patterns on Oriental sword blades are considered so great a beauty, and are indicative of so fine a steel, that many endeavours to successfully imitate the appearance have been made both in England and abroad. Hitherto, however, these attempts have been unsuccessful, and the prevailing idea seems now to be, that the Damascus sword pattern is a casualty altogether due to that mottled appearance of the Wootz iron, from which the steel that entered into these swords was prepared, and to the imperfect means of hammering which the sword artificers possessed.

Everybody has heard of the famed blades of Toledo. There exist some remarkably beautiful specimens of this manufacture in the Spanish division of the Exhibition. Unlike many other branches of industrial art in Spain, the manufacture of sword-blades has not languished. At the present day weapons are turned out of the arsenal of Toledo as good as, if not better, than at any former period. The two specimens of Toledo blades now in the Exhibition, which roll up in a circular coil within their serpent-like sheath, are miracles of fine temper, good steel, and artistic skill, and the cavalry swords are beyond all praise. We wonder that there is not exhibited amongst the Toledo blades an example of the bull-fighting sword, which is peculiar in its form and general make, being slightly curved on the flat, and altogether without a guard.

Whilst on the subject of swords, it will be as well to remark, that steel, of which such frequent mention has been made, is merely a compound of iron with carbon, usually about the proportion of one to one and a half per cent. Certain specimens of steel contain, moreover, a notable portion of alumina and of silica.

Carbon and the diamond are, so far as chemical composition goes, one and the same; and hence it is, that if a hole be drilled in a rod of iron, a diamond inserted, plugged up with another bit of iron, and the whole exposed to fire, the diamond will disappear, and the iron will come out steel. We make our steel by the far less expensive mode of heating iron bars with charcoal; but the celebrated Polish traveller, Count Rzwruzchi, informs us that he had seen an Arabic MS. in which it was stated that the Turks in ancient times improved their sword blades by sprinkling them while red hot with diamond and ruby dust, and beating them with a mallet. The diamond would yield carbon, and the ruby alumina, and thus the blades would acquire the properties of very good steel; but people are less extravagant in these calculating days.

The method of forming sword blades, as at present followed in England, is very simple. The manufacture is almost exclusively confined to Birmingham; and the steel of which the swords are made comes from Sheffield. Cast steel is the quality employed, and each piece is sufficient to make two blades. The operation is commenced by drawing out each end, by forging, to about half the thickness of the bar, leaving a few inches in the centre the original size, each end in its turn serving as a handle to hold it by while forging the other. Eventually the centre part if cut through and fastened, by welding, to the piece of soft iron which enters the sword hilt. and which is called the tang. The blade is now raised to a bright red heat, and plunged into cold water edge foremost, by a cutting movement, which is immediately changed to a perpendicular one. In this state the blade is quite brittle, and very often bent. It has now to be passed through the forge again until a certain colour is acquired, with practice alone can indicate; and in this state of the operation it is set straight by the eye. Lastly, it is ground, polished, and embossed.

This slight sketch will suffice for our notice of swords, and now, before proceeding to the subject of projectile arms, it remains to pass a few remarks on the bayonet. This weapon, by which the musket is connected with the pike, was of French origin, having been originally manufactured at Bayonne, and hence its name. At first it was merely a dagger with a handle made to fit into the musket barrel when discharged. Eventually the present fashion of attaching it by a socket on one side of the muzzle was adopted, the great advantage of which it is unnecessary to point out.

Thus much, then, on the subject of arms used at close quarters. Our next communication will be on projectiles.

HOROLOGICAL SECTION.

(FIFTH NOTICE.)

Against the western boundary "wall" of the British Horological Section we first discover a clock whose dial is covered up with paper; the sole object of Mr. Loseby, the exhibitor, being to show his arc compensation and improved form of movement pendulum. The compensation for the change of arc is effected by a fine hair spring.

129. The turret clock, manufactured and exhibited by Smith and Sons, in the Middle Gallery South of the Great Exhibition Building, is one of the most striking features of the Horological Section. The improvements consist, first, in making slots in the frame, whereby the wheels and pinions can be set to their true pitch with the greatest accuracy: if any part requires to be cleaned or repaired, it can be removed without taking the clock to pieces; and the metallic bushes being fastened with bolts and steady pins in the slots, the bolts have only to be unscrewed and the parts requiring repair removed, repaired, and afterwards replaced without disturbing any other portion of the works. Secondly, this clock has a half dead beat escapement, which is considered safer than one of a dead beat on account of its having a slight recoil; and having a flange to the escapement, a much stronger impetus is given to the pendulum. Thirdly, the arrangement, and size of the wheels are such that equal power is given proportionately to each; thus, less weight is required to keep the clock going, and the wear of the machinery is much economised. In the fourth place, the barrels are made of iron instead of wood, the material ordinarily used; the objection to which latter material is, that, after being exposed in a tower for some time to the alternations of heat and damp, the barrel becomes warped, and, therefore, subjected to unequal pressure on opposite sides. Another advantage of the cast-iron barrel is, that the clicks and ratchets are secured by the safety cap, and arranged in such a manner as to prevent the lines coming into contact with the clock-work. In the striking part of this clock, the hammer is raised by an eccentric lever fixed on the second wheel: at the end of the hammer tail is a small steel roller, which, running on the eccentric, causes the "lift" to be uniform. As by each blow of the hammer the fly makes only four turns, so is the oil better preserved about the pivots. The exhibitors of this clock, who object to the use of cast iron for wheels, though Mr. Roberts has successfully applied it for the wheels of his "Alpha clock," recommend either yellow hammer-hardened brass, properly amalgamated, or gun metal. The chief objections to the use of cast iron for wheels are the chances of fractures from flaws in the castings, and the difficulty of repairs thereto in case of accident.

Messrs. Smith and Sons also exhibit a turret quarter clock, a detector clock or watchman's timepiece, a 400-day timepiece, an eight-day dial, clocks for China and Turkey, and a regulator. These are placed in a glass case close to Mr. Loseby's clock, and in front of the western wall of the Horological department.

The turret quarter clock chimes the quarters. The wheels are of gun-metal, and the pinions of hardened and well tempered steel. The works of this clock may also be removed for repair, without taking the whole to pieces.

The detector clock, or watchman's timepiece, is similar to one which has been successfully used at the Coldbath-fields Prison for the last five years, and presents a complete check to irregularity and neglect of duty on the part of the night warders or watchmen, as their absence is correctly registered on the dial The registering apparatus consists of a revolving circular frame, fitted with springs and steel pins; and its general appearance is that of an ordinary sized bracket clock.

Many of the clocks exhibited in the Foreign department, in addition to the hour, minute, and seconds hands, have also the means of indicating the days of the week and month. In Messrs. Smith's 400-day clock, which is worked by a spring, and has a mercurial pendulum, we find the same useful additions, which, with the advantage of having to wind it up only once in 400 days, and its elegant appearance, from the works being visible under a glass case, render it not only a useful, but also a very ornamental. appendage to a drawingroom mantel-piece.

The frame of the eight-day dial is made of solid Spanish mahogany, handsomely carved with the rose, shamrock, and thistle, conspicuous, as also flowers of various nations of the earth.

In the clocks for Turkey and China, by the same firm, it has been found necessary to substitute brass chains for gut lines or steel chains, as ordinarily used, in order to counteract the injurious effects of the climate of those distant lands. The figures on the dials of the last-named clocks are those of the countries for which they are specially constructed.

The principal feature of the regulator is a new self-adjusting pendulum, invented by the exhibitors, which is far more certain in its operation than the ordinary compensating pendulum, and far more economical, being less than one-sixth the price of the commonest mercurial pendulum. Instead of the ordinary rod by which the ball is suspended being attached to its centre, a bar is secured to the side of the ball, and a wooden rod fixed thereto; so that the elongation or shortening of the rod by change of temperature turns the ball on its axis, and thus preserves accurately the distance between the points of suspension and oscillation respectively.

In addition to the above, Messrs. Smith also exhibit the "Uniformity of Time Clock and Telegraph," invented by Mr. Francis Whishaw, C. E., one of the uses of which is to regulate time between distant places to

the hundredth part of a minute, by means of sounds transmitted by electrical agency. It also forms a very powerful telegraph, as there are four distinct alphabets and numerous signs and signals distinctly marked in red and black on the annular movable plate which surrounds the dial. There are four hands, which rotate together: one of these is distinguished from the others by being of a light colour, and is called the *index hand*, as by it the class of signals to be used is indicated; the other hands are used for pointing to the signals, which are thus more quickly given than if only one hand were used. By two electrical bells, of dissimilar sound, the particular quarter of the dial on which the signals are to be read off is readily understood. Besides the telegraph dial and regulator, there is a second face with the ordinary hands, so that one side may be in the telegraph-room of the railway station, while the other faces the booking-office.

"*Tempus rerum imperator*" is appropriately painted on the dial of Lovelace's unique astronomical clock, known as the "Exeter Clock," which is placed in the West Gallery, not far from Willis's large organ, and on the south side thereof. This extraordinary example of patient industry and consummate skill on the part of poor Lovelace, who, after spending thirty-four years of his life in accomplishing his task, died in great poverty, should be carefully examined, as one of the curiosities of the Exhibition. It is 5 feet in width, 10 feet in height, and weighs something like half a ton. Two sets of figures in the hour circle surround the dial, viz. from 12 at noon till 12 at night, and from 12 at night to 12 at noon. The shape and size of the moon are very cleverly shewn, as well as her age, &c., the month and the day of the month are also indicated. It requires to be regulated only once in 130 years, strikes the hours, and chimes the quarters. The times of sunrise and sunset respectively are also shown, by means of an horizon, receding or advancing according to the season of the year. Once in every four hours a psalm tune is played, an index at the same time pointing to the name of the tune. During the playing of the organ, two moving figures, Fame and Terpsichore, are seen in motion, keeping proper time.

130. Roberts' Alpha Clock. We have already stated that this clock is one of the greatest novelties in the Horological Section of the Exhibition, and forms a conspicuous object in the Western Gallery.

It differs in many particulars from the church clocks as ordinarily constructed, in which the works are generally arranged between long parallel bars of iron, united together by stretchers, to constitute the framing, and mounted on a frame or a table, usually of wood, which, in some cases, is not very substantial. The framing of the "Alpha Clock" is of pyramidal form resembling the letter A (hence its name). As the framing extends to the floor, it requires no other support; thus greater stability is attained—a circumstance of the utmost importance, especially when, as in the present instance, the pendulum is suspended from the clock frame itself. Another advantage to be noticed is, its superior adaptation to the decreasing sizes of the wheels in the respective trains, the largest wheels occupying the lowest place in the framing (which, by the old arrangement, is lost room), and considerable economy of room resulting from the wheels being placed in vertical, instead of horizontal series. The journals of the iron shafts in this clock are case-hardened, and those of steel are hardened and tempered, and all are subsequently made perfectly true by the process of "lapping" in the lathe. The bearings are of cast iron, fitted to their respective places with bolts and steady-pins, in such a manner as to admit of being readily taken out and replaced by one man. The wheels and pinions, except those in the escapement, are of iron, with the teeth cast on them, which, having the scale or crust unremoved, causes their work to be done without much friction, as the scale or crust is very hard. The barrels are entirely dispensed with, being superseded by pulleys, from each of which the endless chain is passed over a pulley to the weight, and also over another pulley to a counter weight, by which arrangement one weight is made to actuate both the going and striking trains; and, consequently, any mechanism for "maintaining power" whilst the clock is being wound up is rendered unnecessary. In the accompanying Illustration are shown the arrangements by which one weight is made to actuate a third train for striking the quarters. The same object may be effected by using a rope instead of a chain.

By dispensing with the barrel, Mr. Roberts has obviated the difficulty which has hitherto existed of placing the clock in the best position in reference to the room and the dials—a desideratum which none but those who have had experience in fixing church or turret clocks can properly appreciate. The pendulum rod is of simple construction, and it is believed that the arrangement for counteracting the injurious effects of change of temperature upon it will prove very nearly an approximation to complete compensation. The experiments for ascertaining the effects of change of temperature upon the different metals usually employed for the purpose were made by Mr. Roberts himself. The pendulum bob is in form a circular segment, whose centre is the point of suspension. In plan it resembles a boat constructed to pass through the water in either direction, with the smallest amount of resistance. Its length in the direction of the plane of oscillation is considerable, and, consequently, its weight is distributed less over the rod than usual. The escapement acts upon the pendulum only once during every double oscillation, and then leaves it to vibrate as independently of the train as can (probably) be done with advantage; and the escape-wheel being allowed to act on the pendulum for a portion only of the time it occupies in ascending from the vertical, such arrangement, it is presumed, cannot interfere injuriously with the effect of gravitation upon the pendulum. The escape-wheel impels the pendulum by means of a spring, adjustable by a screw to regulate the necessary amount of oscillation which shall be given to the pendulum: this spring prevents injury being done to the escape-wheel, should the pendulum be drawn towards it when the wheel is not in its proper position; the spring also prevents the action of the escape-wheel from materially interfering with the smoothness of the oscillations of the pendulum. The detents for locking the escape-wheel are upon a spring attached to the framing, and the pendulum is independent of them during a considerable portion of its oscillation, while the pallet-levers are considerably longer than the radius of the locking-pinion; consequently the power required to unlock is so small as not to interfere materially with the correct performance of the pendulum. The remontoire is of a simple and inexpensive kind, and admits of great latitude in its adaptation to the pendulum when suspended from a wall. In order to render the entire clock visible at a distance, the hands are made broader than is usual in public clocks generally. The shafts of the clock-hands are made of gun-metal, to avoid the injurious effects of oxidation, and are of extra strength, so as to prevent being strained by gales of wind. The wheels of the "dial-work" are made of cast-iron, and sufficiently large in diameter to keep the hands steady. The "striking" apparatus is, we believe, new as respects the use of gutta-percha for the hammer; and the mode of regulating the interval of time between the blows is also new, and effects that object more perfectly than is done by the fan (the velocity of which is sensibly accelerated whilst 12 o'clock is being struck). By dispensing with the fan (which ordinarily requires more power to work it than the hammer), and using a small hammer whose velocity is greater than usual, Mr. Roberts produces as full a tone from a given bell with only one-fifth the power required by the old mode of striking. This clock has been sent to the Exhibition without any other adornament than that of paint, which is quite necessary for the prevention of oxidation; and the parts of wrought and cast-iron respectively are distinguished from each other, the former being coated with blue and the latter with bronze colour.

Mr. Bennett, in addition to the articles already mentioned, exhibits in the Western Gallery, and not far from the "Exeter clock," his improved turret clock, which forms a sort of companion to Mr. Roberts' "Alpha" on the other side. Shepherd's electric clock having three faces, one on the exterior of the south side of the Transept, one in front of the South Transept Gallery, and the third in front of the Western Gallery, has already been described and pictorially represented in the Illustrated London News.

419. Whishaw's centimetral chronometer, or velocentimeter, is exhibited with that gentleman's telegraph and telegraphic apparatus in the Middle Gallery North, chiefly on account of the very imperfect arrangement of the Catalogue, giving only one number to each exhibitor, notwithstanding the articles exhibited are for totally different purposes. The centimetral chronometer is for ascertaining most accurately, merely by observation, the velocities of railway engines and railway trains. A moveable ring surrounds the dial, containing velocities calculated on the standard of 1320 feet, or a quarter of a mile. It is furnished with a central dead hundredths hand; so that by moving *Zero* on the ring in a line with the central hand, at the instant of passing one of the quarter of a mile standards, and then reading off the marginal figures at the instant of passing the next quarter of a mile standard, the velocity due to the quarter of a mile passed is accurately given. The ring is movable, so that for taking velocities on foreign railways a kilometral or other scale may be substituted at pleasure.

434. Among the electric and other telegraphs, Mr. Bain, so well known to the scientific world, exhibits his electric clocks, to which we alluded on a former occasion; and notwithstanding the vibration of the gallery floor, which renders the exhibition of pendulum clocks under such circumstances most unsatisfactory, those of Mr. Bain appear to keep tolerably good time.

We omitted to notice Mr. James Lamb's 400-day skeleton timepiece, which is not only a very useful, but likewise a very ornamental, production, and is to be found on the third counter of the British Horological Department.

ON MATTERS STRUCTURAL, AS CONNECTED WITH THE GREAT EXHIBITION.

Amongst the necessaries of life, it will hardly be denied that a healthy and secure habitation may fairly be classed, or that it should take, as an essential, a high place in our consideration. Long before the fine art architecture comes into play, constructive science has had ample scope in producing a wholesome and safe abode; yet, if we examine into the condition of buildings as to choice of site, treatment of the soil, selection of materials, modes of construction, adaptation of style to purpose and form to climate, and, in fact, their general propriety, we shall most commonly find that the substantial utilities have been much sacrificed at the shrine of superficial show. This, it appears to us, holds good most strongly in the humbler grades of structures; for, in the employment of established architectural forms, in decorating, exteriorly, the mansions of the wealthy, the artist's exuberance of fancy must ever be chastened by the refinements of classical taste, permitting much of the expenditure to seek its channels in enhanced materials and workmanship; while, in the dwellings of the poorer orders of society, architectural display is not always the last thing aimed at, but often the substance is pinched for the purposes of ostentation. This is an evil so flagrant, that when cities advance to importance, municipal laws are called into existence for its suppression; yet such is the perversity inherent in human constitutions, that these statutes, any more than others, are never sound or thoroughly practical adaptations of the means to the end. Be the combination of artistic skill with practical experience what it may, still some causes—interests—will operate to deform the bantling. Unfortunately, too, it does not follow that the successive improvement of our appliances which daily discoveries and inventions produce, results in a corresponding advancement of the aggregate towards perfection; for the counteracting influence of competition is ever at work, deteriorating the manufacture as fast as ingenious minds can devise the object. A new raw material is hardly before the public before the worthless traders in spurious compounds—men whose part in society is to sap its foundations with their frauds—exert themselves, though indirectly, to drive it from the market, and leave you poorer than before, in the possession of a counterfeit. Nor is it different with those contrivances which are of a mechanical nature; for this same incubus soon hatches for you such "improved patents"—such "economical" imitations, that should you recognise in them the features of the respectable original, you find them so degraded that it is not to be wondered at if you dread and altogether eschew the acquaintance.

Such considerations as these press upon our attention the importance, nay, the necessity, of obtaining the establishment of a permanent Museum of Industry, wherein the first and best fruits of national or international skill should be accumulated, at all times ready for convenient inspection: and it is to be hoped, therefore, that the Crystal Palace and its wealth of science and art, forming a collection such as never could before, and most likely never would again, be gathered together, will not rashly be demolished under the supposition that it has fulfilled its part. That great practical cyclopædia is, no more than a written one, to be read through and laid aside; but should be kept for reference when occasion requires. As a *dépôt* for the display of new inventions, no advertising medium could surpass it; and hence, probably, our best chance for its permanency being eventually resolved on. In architectural and building matters, we should not have to ransack a series of museums for what we want, but should find the whole in one: thus the Museum of Practical Geology, while it offers to the inspection of the architect and the builder a most interesting collection of stones, as well as of other materials, can never, if its integrity be preserved, present all that they have occasion to take cognizance of. And to the architect, how few of the branches of science or art illustrated in the Palace of Industry are not necessary, or deeply interesting.

If inventions suffer through the agency of competition in the way we have indicated, happily our scientific literature is not capable of similar obliteration; and thus our store of available knowledge is ever on the increase; our facts keep linking themselves into more connected relation to each other; our principles gain in perspicuity and precision. Trifling causes bring above-board neglected things; men wonder why everybody did not think of them before; they choose sides, and dispute with the most ingenious yet antagonistic arguments; and truth is eventually evolved somewhere between. In structural things, how much has been brought out within a few years! As regards passages or fluids, for example, whether sewers or smoke-flues, our knowledge—for, supposing that before we were not ignorant, say our convictions are now very clear compared with what they formerly were, we do not expect either liquid or vaporous bodies to flow through angular so readily as through curvilinear passages, or through rough so readily as through smooth ones; and we also pay greater regard to the proportion which the channel bears to the body which it conveys. Of ventilation, we have at least become familiar with the principles, so that we are enabled to weigh the respective claims of the upward and the downward modes; and have become chary in believing in its spontaneous or natural action in buildings, which are not natural, but altogether artificial things. The chemist has helped us to a knowledge of the properties and comparative values of waters, and we make our hydraulic arrangements accordingly; but when we mention him, we shrink from the attempt to do justice to his services, which range round the whole cycle of our materials. Even our smoky chimneys we have learnt to cope with, having discovered that our curative efforts formerly were usually applied at the wrong end, and that a fire has to be fed with air as well as fuel—yet not necessarily from doors and windows, to chill our backs while we are warming our faces. In the use of heated air for warming, we guard against undue dessication, or the impregnation of it with sulphurous products. In foundations we are well nigh as adroit as the ancient Romans in the formation of artificial rock; and we know also how to defend the walls of our superstructure against the insidious operation of capillary attraction. Our experimental researches have taught us how to obtain the maximum of duty from the minimum of material; so that we do not, like our ancestors, load our walls with worse than useless dead-weight. In fine, would we but resolve to build in the best way, so much light is there diffused around us, that we should have no difficulty in eclipsing what the wisdom of those same ancestors has achieved and bequeathed to us.

In the Crystal Palace we shall not look in vain for instruction on almost any point, whether it belong to the province of the artist or the artisan; and, as so much of human welfare, physical and moral, is involved in the question of its dwellings, the opportunity should not be lost of bringing together the scattered excellences there to be found, not merely into juxtaposition, but, as far as may be, into relative and philosophical connexion. That great structure, apart from the rich grain to which it is the mere haulm, is a fertile source of study in itself, in design, construction, decoration, adaptation; and when we regard it as at once a thing in great measure unprecedented, and as the production of a few brief months, its deficiencies, if there are such, claim our utmost consideration. In its lightness we see the triumphant application of iron, which the architects of the middle ages elaborated into such elegant forms without dreaming of its constructive capabilities. In the multiple system of its plan we see the adjustment of the arrangement to the material, the rendering sufficient the smallest variety, not merely of drawings, but of patterns, moulds, and castings. In the discussions which arose respecting the glass, we are warned that it is not sufficient that a certain thickness be stipulated for, if "the trade" are in a position to prove that the furnishing a supply which averages such thickness is esteemed a fulfilment of that condition; for if such gauge is enough for the purpose, it will be no compensation for a quantity under it being destroyed, that the remainder contains a corresponding difference in excess: thus the builder will see that some revision is wanted in the mode of assorting that article, to obviate disputes. In like manner, valuable opinions were elicited from decorative artists of eminence on the subject of the colouring, which, apart from the work as executed, are calculated to suggest caution against the too common practice of hastily adopting what may appear to be an appropriate mode of treatment, without first considering the case in all its bearings: for a north room, for example, will want a different tone of colour from one whose aspect is southern; and if it have faults of proportion, much may be effected in the decoration to mitigate them; while, independently of these considerations, the objects—furniture, paintings, &c.—which are to occupy it must be held in view, to obtain a satisfactory result. Thus it appears, that, in things architectural, the great Industrial Conservatory, like all unwonted cases, has produced much that is novel, and is likely to prove highly suggestive; and we may adopt it as a safe postulate, that it will prove the germ from which will spring up a style rationally adapted, in whole or in part, to structures of many kinds. In its contents it offers every variety of material—complete series of such as we have been accustomed to the use of, in their old or in improved forms, and many varieties which are almost or are altogether new to us: in models, it presents to us executed works, the originals of which we might never have had the opportunity to examine, and this not in design only, but in construction; and it also lays before us ingenious conceptions not yet practically realised, which only this friendly contention of all nations could induce their projectors to put into the tangible form in which we behold them: in design, the examples range through every style, period, country, and object, and each in their simplest and their most ornate phases; while, in construction, they embrace the peculiarities appropriate to every variety of purpose, and not merely to generalities, but to minute details. The result is, that we are enabled to consider class objects in relation together, discover their redundancies, and study them in their unembellished principles.

MR. FOX, CONTRACTOR FOR THE CRYSTAL PALACE.

Mr. Charles Fox (whose Portrait appeared in the Illustrated London News of July 5, page 21) is the senior partner in the eminent firm of Fox, Henderson, and Co., constructors of the Crystal Palace, and is a remarkable instance of the power of natural genius when combined with great energy. At an early age he was articled to his brother, Mr. Douglas Fox, the present Mayor of Derby, with a view to entering the medical profession; but a taste for engineering studies led him to devote to mechanical science every leisure moment; his indentures were cancelled, and he was allowed to follow the bent of his inclination. The immediate causes of this determination appear to have been a visit to the manufactories of Birmingham, and the impression produced upon his mind by the opening of the Liverpool and Manchester Railway. Captain Ericsson, who was fortunate enough to be Mr. Fox's first employer, speedily appreciated his remarkable mechanical talent, and rapidly increased the small emoluments on which the young aspirant to engineering eminence had been obliged to commence his career. But this beginning of prosperity did not last long. Captain Ericsson was compelled by adverse circumstances to relinquish business, and Mr. Fox lost at that time all his savings as well as his situation, and was by an accident deprived for three months of the use of his arm. He did not, however, lose courage; but, struggling on as a lecturer, as a scientific assistant, and even occasionally as a practical mechanic, he at length attracted the attention of Mr. Robert Stephenson, and was appointed one of the assistant engineers to the London and Birmingham Railway Company, at the commencement of the construction of that line. In this post he had only to profit by the admirable opportunity afforded him by the great works with which he was brought in contact, under the eminent engineer whom we have mentioned. Refusing every offer of pecuniary advantage, however tempting (and such were not wanting), to leave this position, he remained with the London and Birmingham Railway Company until a year after the opening of the line; and then only left their employment in order to join the late Mr. Bramah in forming the large manufacturing business which is now so well known as the great firm of Fox, Henderson, and Co.

Mr. Fox is a man of good family, and is highly connected. His father was the late Francis Fox, Esq., of Derby, and his venerable mother, who has lived to see her son's admirable success, is a daughter of the late Archibald Douglass, Esq.

Of Mr. Fox's personal qualities we cannot do better than quote the words of a daily contemporary, the *Morning Chronicle*:—"He is, individually, a fine specimen of the frank, large, capacious mind; and had we to search for one who could perseveringly and with dignity sustain the open, energetic English character, with all the world as witnesses of its struggles against difficulties, there are few heads of more solid power, and few wills of more untiring grasp, with which we could entrust the representation of the national intellect and temper.

THE CRYSTAL PALACE.—MUNDAY'S REFERENCE.

The following is a copy of the operative part of the award made by Mr. Stephenson, of the sum due to the Messrs. Munday, for the determination of the contract entered into by them for undertaking the Great Exhibition:—

Now, know ye, that I, the said Robert Stephenson, having taken upon me the burthen of the said reference, and having duly and in accordance with the powers and provisions of the said first-mentioned indenture, enlarged the time for making my award until the first day of September, one thousand eight hundred and fifty-one; and having been attended by the counsel and agents of the said parties respectively; and having heard and considered the several statements, allegations, and evidence made, tendered, and given before me on the matters so referred to me; and having also taken into consideration all the circumstances which I was required to take into consideration, do make this my award of and concerning the said matters so referred to me as follows:—I award and determine that the amount of compensation to be made and paid to the said James Munday and George Munday, for the outlay, risk, liability, anxiety, trouble, and loss which they have incurred in the matter aforesaid, and in relation thereto, and on account of the said agreement being determined and put an end to, is the sum of five thousand one hundred and twenty pounds. And I further award and determine, that all the costs, charges, and expenses of and attending, and in anywise relating to this reference and arbitration, shall be borne and paid by the said Society; and that the costs, charges, and expenses of the said James Munday and George Munday therein, and in relation thereto, which I have settled and ascertained at the sum of five hundred and eighty-seven pounds one shilling and fourpence, shall be reimbursed and paid to them by the said Society, within ten days after notice to the said Society of this my award. And I declare, that I make no claim or charge for any compensation to me for my trouble in the matter of this reference; but, inasmuch as I have incurred certain charges and expenses in the payment of fees and compensation to counsel and other persons whose advice and aid I have required in the premises, the amount of which is not included in the said sum of five hundred and eighty-seven pounds one shilling and fourpence, I order and direct, that the amount of such last-mentioned fees and compensation, and the costs and expenses of this my award, shall be borne by the said Society; and that, if the said James Munday and George Munday shall pay the same, on taking up this award, the same shall be repaid to them by the said Society within the period last aforesaid. In witness whereof, I have hereunto set my hand and seal this twenty-first day of July, one thousand eight hundred and fifty one.

Signed, sealed, and delivered by the said
Robert Stephenson, in the presence of
W. Meyrick, 16, Parliament-street. ROB. STEPHENSON.

EXHIBITION TRAINS.

(*To the Editor of the* Illustrated London News.)

Sir,—I take the liberty of addressing these few lines to you, from a conviction that anything relating to the Great Exhibition will attain the greatest publicity by appearing in the columns of your paper, it being generally considered as the *only* Journal of the Exhibition.

In last Saturday's Number (page 86), you express an opinion that the great majority of the mechanics from Lancashire and Yorkshire have yet to visit the Great Exhibition; such I believe to be the case. Now, there are many who condemn the present arrangement of the railway companies from these two counties, and with good reason. Why compel a poor man to stop seven, fourteen, or twenty-one days in London? Of course, a moneyed man can return when he likes by paying the ordinary fare. If the railway companies would allow the option of returning on alternate days (if not daily), it would be a great accommodation—not only to those whose business might call them back within a week, but also to those who might wish to stay a day or two beyond it. The Yorkshire line adopted it in the month of June; why not in July and August? If the Yorkshire company would return to their former arrangements, or the Lancaster and Carlisle Company adopt a similar one, I am convinced the increased traffic on the accommodating line would soon show how much it was appreciated.

By inserting the above, you will confer a favour on many of your admiring readers.

I am, Sir, yours respectfully,
Lancaster, July 21, 1851. A Lancastrian Subscriber.

FIRE-ESCAPES IN THE GREAT EXHIBITION.

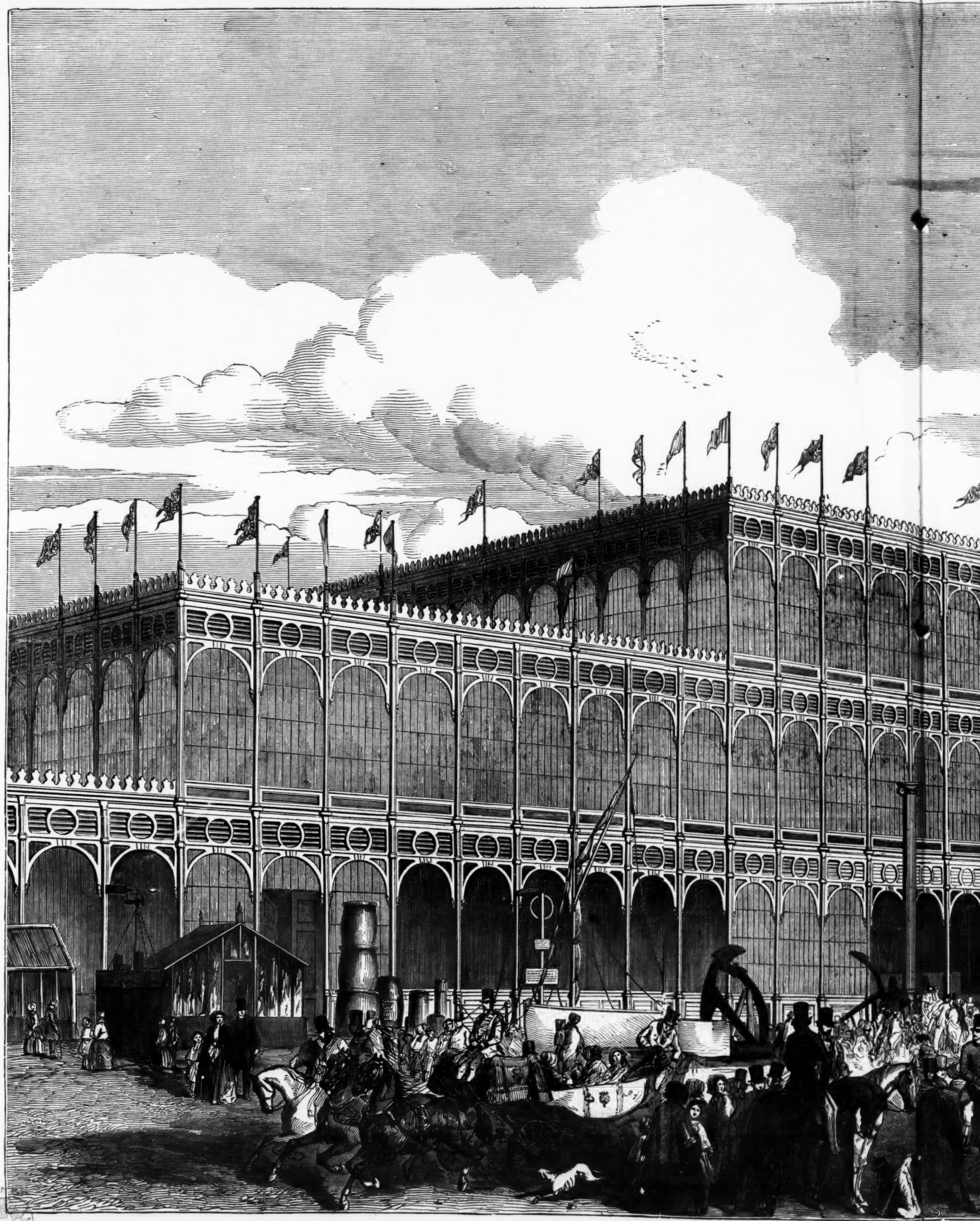
(*To the Editor of the* Illustrated London News.)

Sir,—In your notice of Jackson and Clay's fire-escape, in the Illustrated London News of the 19th, you say, "We could not make out how the inventor proposed to regulate the rapidity of the descent;" and as I have found it frequently the case that the action of the apparatus is very imperfectly understood, I shall feel favoured if you will allow me space in your excellent Journal to explain the same:

This Escape (Class 7, No. 75) is in form of an ordinary bed-room table, with a top which folds over so as to project partly out of the window, and strong enough for a person to sit upon while buckling the belt round the waist. The copper wire cord to which the belt is attached, is wound round a drum inside the table, and passes over a pulley in the end of an iron arm or lever, which is made to fold into the table when out of use. This lever is divided at the inner end into two arms, which press upon the axle of the drum, and so form a break, whereby its movement is retarded to nearly the extent of the weight hanging upon the cord; and, as will probably now be evident when a heavy weight is going down, there will be a corresponding pressure upon the break, and *vice versâ*, making the escape completely self-acting, without alteration for any weight, from the child to the heaviest adult.

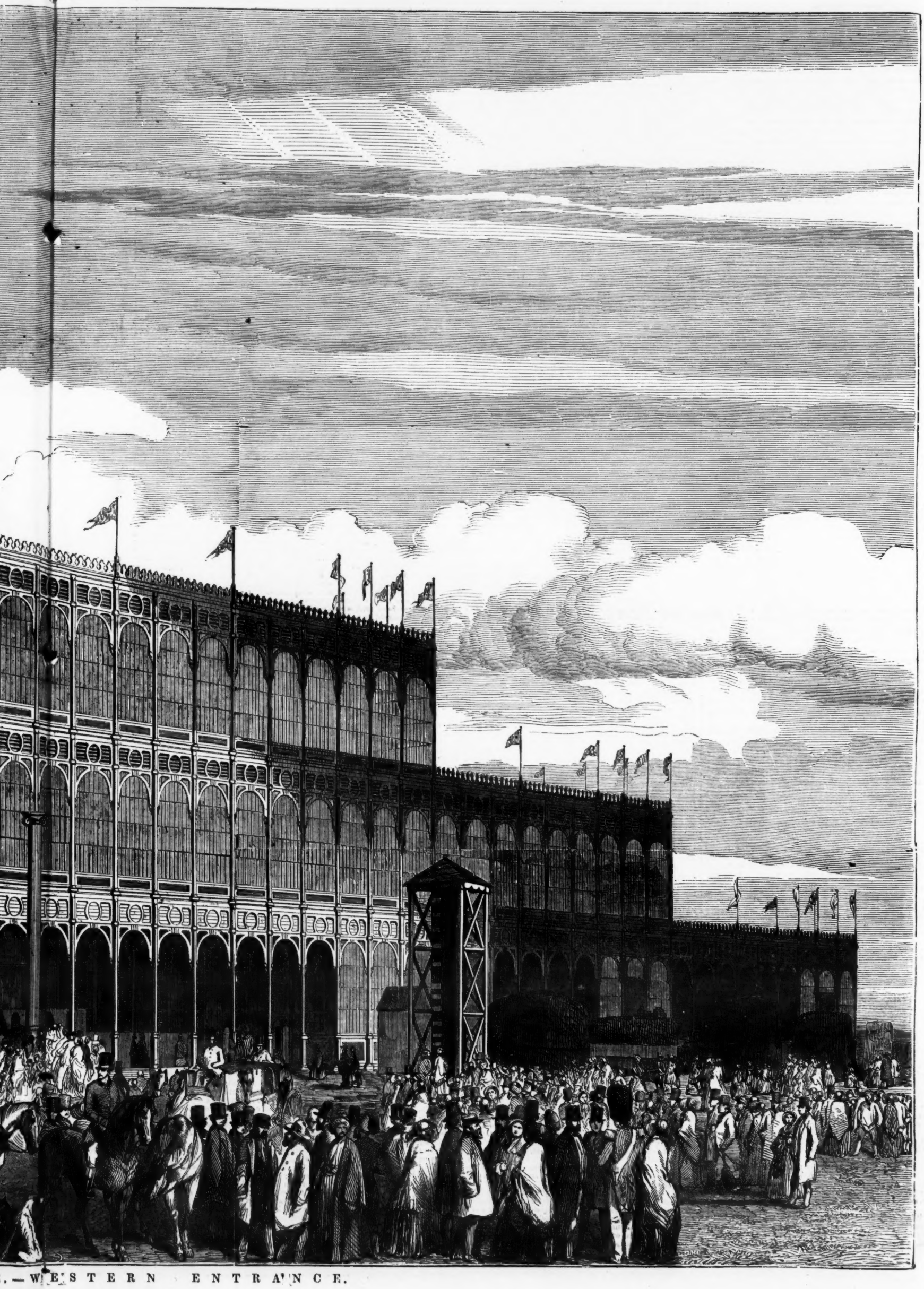
I may say I am of the same opinion as yourself, that the best fire-escape is a trap-door in the roof, where it is practicable, but it is not always so; and where there is no parapet would be extremely dangerous.

I am, Sir, yours, &c.,
21, Horner-street, Lambeth, July 21. CHAS. W. JACKSON.



THE CRYSTAL PALACE.—WEST

LONDON NEWSPAPER



.—WESTERN ENTRANCE.

CHEMISTRY.

(SECOND NOTICE).

WE return once more to the Great Exhibition for the purpose of making another chemical sketch, and resume the thread of our description at the point where we left off.

We find that, according to our chemical classification, the next subjects to be described are the metals copper and tin. They are the chief, if not the only metals used in the manufacture of statuary bronzes, although some bronzes also contain an admixture of lead and zinc. The physical appearance of copper is well known to all. Whilst bright and clean, the beauty of its surface is only inferior to that of gold; but it speedily tarnishes, as all know who have handled our copper coin, and, when tarnished, its beauty is gone. Copper is very prone to ally itself with other metals, and form alloys, and is not very particular about the number of alliances it forms at the same time. The alchemists, who assimilated every then known metal to the qualities of some deity, whose name it was made to bear, and under whose protection it was feigned to be, dedicated copper to Venus; and when in old alchemical writings the word Venus occurs, we may always understand it to mean copper. The term copper is derived from Cyprium (Cyprus), the locality in which it was first discovered, or at least from which it was most largely obtained by the ancient Greeks. Few metals have a larger sphere of utility than copper. We have seen it entering into the composition of a statuary bronze. Gun-metal and bell-metal pinchbeck, tombec, bronze, and many other fancy alloys, the names of which it would be useless to write, have all copper for their basis. In its pure or uncombined state it is rolled into sheets or leaves, and formed into vessels of a thousand shapes. Perhaps the most striking example of the perfection of copper-smith work may be seen in the sugar-boiling vacuum pan in the Great Exhibition, and also an apparatus for obtaining a supply of fresh water from the ocean, designed for the use of ships, and shown in the French department of machinery.

Copper, like iron, is considerably softened by the application of fire, which softness remains until it has been exposed to the operation of beating or hammering. Unlike iron, however, it does not weld—that is to say, two pieces, at an elevated temperature, cannot be made to adhere by hammering; indeed, thick copper-plate cannot be hammered into thin copper-plate whilst red hot, but having been made red hot and allowed to cool, then the hammering takes place. Each of the two segments of the copper vacuum pan in the Great Exhibition was first cast in a flat piece, then by alternate heatings and hammerings was brought into its present deeply convex form. The dull hammering noise of a copper-smith's shop must be heard to be imagined. Unlike the clear ringing of a blacksmith's hammer and anvil, the stroke of the coppersmith's hammer gives forth a dead, hollow, painful sound, which in a short time so materially injures the hearing faculty, that very few working copper-smiths exist who are not more or less deaf.

Although copper be so useful a metal in a domestic point of view, yet few are so prone to be productive of dangerous consequences. The action of most acids, air, moisture, and greasy bodies on copper surfaces produces a green coating, known in common language a verdigris: this is a most virulent poison, and has occasionally been the cause of frightful accidents; hence the usual custom of protecting the interior of copper culinary vessels by a coating of tin. Whilst the coating lasts it is an effectual safeguard, but when once an abrasion of the tinned surface occurs, then the exposed copper is dissolved with increased rapidity, because in this case the two metals (copper and tin) and the contained liquid form together a galvanic battery. All the solutions of copper are green or blue, and may be easily recognised by their taste; the only other metal which forms green or blue solutions almost exclusively is nickel. Occasionally the makers of pickles have had recourse to copper vessels for the purpose of imparting a fine colour to their goods; and much has been said about the turpitude of the celestials in imparting by similar means the distinctive colour to green tea. It has, however, been satisfactorily proved by Mr. Warington, of the Apothecaries' Hall, that our Chinese friends employ Prussian blue for that purpose, which Prussian blue was originally obtained from England; but that eventually the march of chemical intellect extended to the flowery land of Kong-fu-tsee, and that the celestials now make their own Prussian blue. Now, Prussian blue can be made with prussic acid, and prussic acid can be got out of Prussian blue; still the substance does not happen to be poisonous, and so our readers need not be frightened by a name.

In the department of the Exhibition specially dedicated to compounds of chemistry and pharmacy, may be seen some magnificent samples of crystallised sulphate of copper, a substance which, when exposed to the action of galvanic electricity, deposits its copper in an absolutely pure form on any desired surface, constituting the process of electrotype, and which under that name we shall have to speak of by and by.

We now come to speak of tin. This is one of the classic metals, and was obtained from the British mines of Cornwall many centuries before the presence of copper in that region was known or suspected. Before the working of iron became general, bronze was, as we have already seen, the material of which the ancient implements of war and husbandry were made, and the tin entering into the composition of the bronze was doubtless obtained chiefly, if not exclusively, from our Cornish mines; whither, stealing along the Mediterranean shores, boldly sailing past the pillars of Hercules, and leaving the Eastern world behind, the adventurous navigators of the Phœnician coasts periodically arrived.

In assuming that to Cornwall the exclusive honour belongs of yielding tin for the bronze weapons of Homeric times, we cannot be far wrong. Tin is a metal tolerably plentiful in the localities where it is found; but these localities are very few; indeed, with the exception of the west of England and the Malayan Archipelago, the presence of tin naturally may be almost ignored. In this respect tin presents a remarkable contrast to most other metals; to iron, for example, which is found everywhere in one of various conditions; thus, wherever there is a warm-blooded animal there is iron, for iron enters into the composition of the blood. This presence of metallic bodies in animals and vegetables is a most curious subject for philosophical contemplation, and one in the development of which many secrets have yet, by philosophic scrutiny, to be revealed. Hitherto it has been the fashion to regard them for the most part as extraneous ingredients, but doubts may be entertained as to the propriety of this idea. The presence of the various metals in organic beings is much more general than people usually suppose: coffee and tobacco both yield traces of copper; many vegetables contain the metal manganese, and gold is said to have been discovered in the ashes of the violet and the vine. Some years ago, the medical jurists were all on the *qui vive* in consequence of the announcement by M. Orfila that arsenic existed as an ordinar, constituent of human bones. Had this been a fact, there would have been an end to all chemical evidence of a positive character in cases of surreptitious poisoning, but, fortunately for the interests of humanity, M. Orfila has since, by repeated experiments, determined that his first notions on this matter were incorrect.

Tin, the metal on which we were passing our remarks, is one that never yet has been found as a constituent in an animal or vegetable body.

This metal admits of a very useful application, with which almost every one is familiar. Under the name of tin-plate, how numerous are the instruments formed, how great their utility, how moderate their cost, how wide the sphere of their application! This tin-plate is made by dipping iron sheets into molten tin. It is necessary that the iron sheets be quite free from adherent impurities; and their preliminary cleansing is a delicate and tedious matter, which we need not stop here to describe. The important discovery of the method of forming tin-plate was of Flemish birth, but ultimately naturalised in this land, which now, we believe, supplies with the material by far the greatest part of the world.

Tin-plate, as it is called, presents the important advantages of working up into instruments by the mere aid of soft-soldering, of never tarnishing whilst the tin coating remains sound, and of presenting, when considerably abrased, a totally innocuous surface to the agency of chemical solvents. In this respect it is as far superior to copper, as copper is superior to it in durability and permanent value in the shape of old metal. Tin-plate, when worn out, is absolutely worthless; and for this reason the investigation of chemists and metallurgists was directed for a long period to the problem of discovering an efficient substitute. At last this was achieved in a direction where least expected. The metal zinc, of which we have already treated under the head of certain large castings in the Exhibition, and as a constituent of brass, is now, when rolled into tin plates, made very extensively to supply the place of tin, and even of lead.

Of all metals zinc is the one which at first presented fewest probabilities of furnishing plates. Under all common circumstances it is a very brittle metal; and at certain temperatures so great is its brittleness, that it may absolutely be ground to powder in a mortar: at a certain other temperature, however, it can be and is rolled into plates, in which the crystalline brittle qualities of the zinc seem quite gone. This zinc-plate can be worked into form, just after the manner of tin-plate, thus forming instruments which, when totally worn out, can be melted down into a mass of good marketable zinc. Zinc-plate, however, unlike tin-plate, rapidly tarnishes, and the tarnished surface imparts poisonous, or at least, injurious properties to the liquid contained. This subject was long in doubt, but may be regarded as now settled; the attention of French, English, and Germans having been turned almost simultaneously to the investigation of this subject, and having arrived at similar conclusions. In France the question of the nocuity or innocuity of zinc was first agitated in connexion with a proposition to substitute, for motives of economy, zinc for tin-plate, in the manufacture of soldiers' canteens. In England, if we mistake not, the same question was mooted in reference to the increasing employment of zinc pans in dairies. For culinary purposes, it would seem, then, that tin-plate will maintain its place, whilst in other applications of the material the cheapness and the size of zinc-plate will cause the preference to be on its side.

Tin is found in two conditions: like other metals, it is dug out of mines, where it exists under the form of ore, usually being the oxide or combination of tin with oxygen; it is also found in large superficial alluvial depositions called streams, in a condition of very pure oxide, easily converted into tin by heating with charcoal or coal. In this respect the locality of tin and of gold present a very striking point of resemblance; and, indeed, it is curious, that gold generally exists associated with stream tin in the same beds, but in portions so insignificant, that its extraction has never been made remunerative on a large scale. Tin miners, however, in the west of England, usually provide themselves with a goose quill, into which they put any little fragments of gold that may happen to come in their way. It is, doubtless, to the circumstance, that tin, like gold, presents itself so frequently near the earth's surface, and in a condition of easy manipulation, that we are to attribute the early discovery and application of both these metals.

Wandering into the French department, with our mental faculties still attuned to the contemplation of metals, we view under a glass case, securely locked, an assemblage of what to the ordinary observer would seem a collection of tin-plate vessels of different kinds. A label, however, affixed to the glass case, informs us that the price of the contents within is a sum very nearly approaching a thousand pounds. These instruments are composed of the metal platinum, and are worthy of our special attention. Few chemical substances present such an interesting field for reflection as platinum. Liebig, in one of his familiar works, traces the development of modern chemistry to the application of platinum, cork, and India-rubber. The idea may appear fanciful at first glance, but a slight reflection will prove the German philosopher to be correct. Without platinum apparatus we could not have oil of vitriol turned into commerce at the insignificant price of three farthings per pound. Without oil of vitriol, cheap and in large quantities, nine-tenths of our chemical manufactures would languish and die; without cork and India-rubber, the delicate manipulations of modern organic chemistry could not take place. In short, view the proposition as we will, the result of our investigations is to prove the intimate connexion between the three substances mentioned by Liebig and the development of chemistry.

Platinum was formerly called platina, the Spanish diminutive for plata, or silver, to which metal platinum offers a certain similarity of appearance. The present appellation of platinum has been given to it in reference to the nomenclature of modern chemists, who, finding it necessary to cultivate some sort of precision in terms, have decided that all metallic bodies shall receive a name terminating in the letters *um*, by which means not only is there a gain of perspicuity, but the old classic rule of termination is not violated.

Platinum is an exceedingly rare metal. Hitherto our only supply of it has been from Peru and Brazil. It exists more plentifully in the Uralian range, but is guarded by the Russian Government with extreme care, none of it being allowed to be exported. Platinum generally occurs in grains, which for the most part are not larger than a pea, but occasionally it is found embedded in rocks; and when thus circumstanced is generally associated with gold. Under the glass shade which contains the platinum vessels of French manufacture are several little bottles which the inquirer will do well not to disregard; they contain representations of the metals which are generally found associated with platinum, and of which we need say no more than that iridium, palladium, and rhodium are the chief. The last is familiar by name, at least, to most people in connexion with the famed rhodium pens, the nibs of which are formed of this metal, celebrated for its extreme hardness. The leading quality of platinum is its excessive infusibility. The finest wire of it, if exposed for hours together to the most violent furnace heat, does not melt; surfaces of platinum never tarnish by exposure to the air, neither is this metal affected by the strongest acid. Oil of vitriol, for example, may be boiled in it with perfect impunity; and hence the great employment of platinum vessels for the preparation of this liquid.

But the circumstance which renders platinum so valuable, namely, its great infusibility, imposes difficulties in the way of its extraction from the ore and manufacture, which only the most refined powers of chemistry have been able to surmount.

The usual means of obtaining metals from their ores, on the large scale, is by the agency of smelting or the operation of fire. Clearly, this operation would be altogether useless, however, in the case of a metal that will not melt. Hence it follows that metallic platinum is obtained by the chemical process of solution, and every particle of those shining vessels was at one period dissolved by means of chemistry into a fluid—transparent as water itself, and of amber colour—very much in appearance like a glass of sherry. If sal-ammoniac be projected into this amber-coloured liquid, the metal unites with the sal-ammoniac, and falls down as a yellow powder. The course of manufacture now proceeds smoothly enough. The yellow powder being exposed to heat, off flies the sal-ammoniac, and leaves the platinum in a condition of purity. Though pure, however, it is pulverulent, resembling very much in appearance powdered charcoal. At this stage of manufacture advantage is taken of the welding property which platinum possesses. The powder being heated to whiteness in an earthenware tube, is first exposed to pressure in order to effect primary coherence, and a rod of platinum of very loose texure is the result. Density, however, is easily given by further heating and further hammering, and the process of lamination and wire-drawing is easy enough. As far as is practicable, platinum vessels are made in one piece; but vessels of more complex shape are formed of a sufficient number of platinum sheets joined together by soldering together with gold. Such vessels resist perfectly well the application of acids, but the gold solder seam is destroyed by a very moderate heat. The beauty of the French oil of vitriol retort consists in the circumstance of its being made out of one piece without the intervention of any solder whatever. The inquirer will also remark, that the platinum tubes, which stand under the glass shade, are also made without a longitudinal solder seam. Platinum crucibles and vessels for exposing corrosive liquids to heat are commonly used by the chemists, though platinum saucepans are luxuries that as yet are almost unknown. Under the French glass-case, however, saucepans of platinum will be seen, and their good qualities may be inferred from a general consideration of the properties of platinum. With them, the cook or confectioner need not fear the occurrence of cupreous poisoning, need not fear the destructive agency of fire on the implements of his *cuisine*. Indeed, for culinary purposes, no metal can compare with platinum; we wonder it is not extensively employed. We will now leave platinum with the final remark, that, anterior to the employment of this metal in oil of vitriol works, and when glass retorts were used instead, the frequent bursting of these caused not only loss of property but frightful accidents; whereas now an accident from the bursting of an oil of vitriol retort is never heard of.

From platinum the transition is easy enough to gold, specimens of which in the ore may be seen in the compartments of Canada, India, and the United States, and manufactured specimens enough in the galleries up-stairs. We know not why gold should be called precious, for, if we except its conventional value as a circulating medium, and give it some little credit for not oxidising or rusting in the air, and for its agreeable yellow colour, this metal possesses very little claim to our admiration or esteem. Gold, nevertheless, has been a favourite metal in all ages; and, notwithstanding all the *washings* of California, it is not likely to become quite vulgarised for some time to come. So far as English coinage is concerned, the inland valuation of the sovereign has not yet depreciated; but most foreign nations took the alarm very soon after the first promulgation of Californian wealth. Hitherto the English sovereign had been a legal tender in Belgium, and Dutch monetary transactions were conducted with reference to the standard of gold. In both these countries the law has now been altered; silver is their legalised standard; and the traveller finds, to his cost, that good English sovereigns are in these countries a positive drug. If the supplies of gold continue to increase as they have for the last four years, it is probable that we shall arrive at something like the approximation of value which subsisted between silver and gold amongst the Romans, and which fluctuated but little until the period of the discovery of America.

The value of gold to that of silver was anciently only as twelve to one, subject to a still greater depreciation under peculiar circumstances. Thus, Suetonius relates that Cæsar brought such a quantity of gold to Italy, that the pound of gold was only worth seven pounds and a half of silver.

Although a precious metal, there, perhaps, is no other, with the single exception of iron, that is so widely diffused. Occasionally, gold is found in veins, but more generally in the condition of granules, which sometimes assume a large size. Before the discovery of gold in California, the principal sources of this metal were the Gold Coast of Guinea, Brazil, and certain parts of the Indian Archipelago.

Gold is known to exist very largely in Borneo, and is said to be exceedingly plentiful in Japan; but the Emperor of those exclusive isles is so ignorant of the advantages of Free-trade—so careful of his gold—that he will not even give a little to his brothers, the Chinese, amongst whom gold is very scarce. The only European countries where gold is now obtained in any commercial quantities are Russia, Hungary, and Spain. Formerly there were gold workings in the south of France, but they are all now abandoned as unprofitable.

Most people have heard of the gold mania in Wicklow—a locality in which considerable portions of the precious metal were once found; indeed, Wicklow is celebrated for having produced the largest piece of European native gold on record, it having weighed no less than twenty-three ounces! Occasionally, spangles of the precious metal are found there still, but so unimportant in quantity, as to be quite beneath the notice of systematic mining operators. It is probable that a considerable amount of gold will be in future produced by Spain—that storehouse of unexplored mineral wealth. Before the discovery of America, in the 15th and 16th century, the peninsula was regarded as a rich source of gold and silver; but no sooner did the profuse mineral treasures of Mexico and Peru fall under the dominion of the Spanish conquerors, than the vast resources of the mother country were neglected. Since the loss of her American colonies, Spain, thrown on her own resources, recommenced the search for mineral treasures. Silver has been worked in various parts of the Spanish peninsula to great advantage; and only last year a Spanish association was formed for extracting gold from the auriferous sand of the Darro.

We commenced our account of gold by calling it a sort of useless metal, which enjoyed a very unmerited reputation. We did it the justice, however, of saying, that it refused to oxidise or rust like most other metals under the usual influences of the atmosphere. This property imparts to gold a certain real value, as will presently be seen. If copper be exposed to the air, it speedily becomes covered with a greenish incrustation called *verdigris*, which is eminently poisonous, whether taken internally or applied to the wounded skin; and thus it is, that although gold may be fashioned into artificial palates for false teeth, no danger can arise to the constitution; and thus it is that real gold earrings produce no inflammation or annoyance to their fair wearers, although earrings of mosaic gold, which contains no gold at all, but is only a superior kind of brass, are often productive of the most distressing results. Although it is the fashion to speak of coinage gold, jeweller's gold, hard and soft gold, pale and red gold, and so forth, the chemical schoolmaster has been sufficiently abroad amongst the readers of our Journal, to render it unnecessary for us to tell them there is only one kind of gold. All the various names above cited refer to certain mixtures, or alloys of gold, with other metals. The gold of English coinage, for instance, is a compound of eleven parts of gold with one part copper. The copper is necessary to impart hardness, pure gold being remarkably soft. Jeweller's gold contains still more copper, the quantity varying with different makers. Gold, we have said, is a soft metal, so is lead; but if a certain portion of lead and gold be fused together, the result is a compound scarcely less brittle than glass.

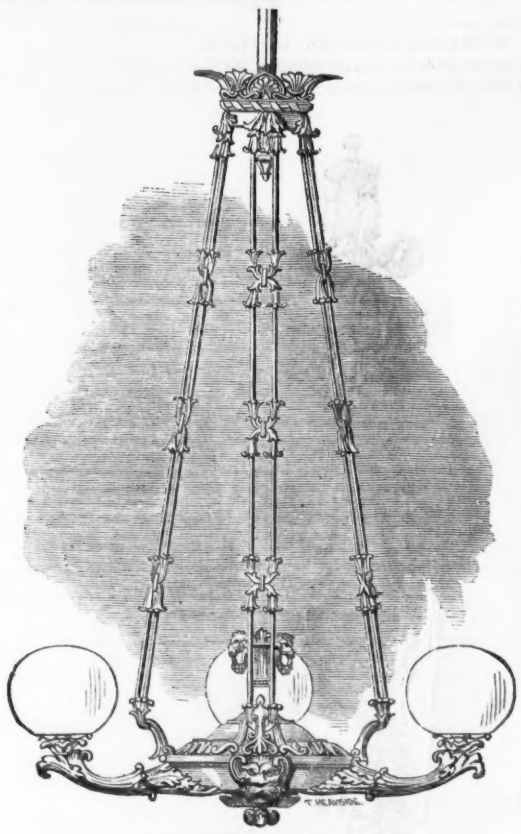
We daresay many of our readers have observed the difference in the colour of sovereigns, some being of a deep orange colour, others verging towards white. This discrepancy arises from the fact, that occasionally in our Mint silver is made to take the place of copper as the alloying material, and hence it follows that pale-looking sovereigns are really more intrinsically valuable than such as possess a yellow cast.

It is frequently the case that a lady's finger is hurt by the too great pressure of a gold ring—we do not speak metaphorically, nor allude peculiarly to rings of plain unjewelled gold. Should ever a case of this kind occur, a very easy method of disembarrassment consists in touching the ring with a little quicksilver, when immediately it becomes brittle, and may be split into fragments by the merest pressure. By employing sufficient quicksilver, the gold ring may be dissolved into the condition of paste, and by applying heat to this paste, all the mercury may be driven away. Now, although this description of the way to disembarrass a lady's finger of a too-tightly-fitting gold ring may be good enough in itself alone, we only intend it as the first step towards an explanation of the mode of obtaining gold. Savage or illiterate people, as we have already said, content themselves by picking up every little shining particle of this metal which may chance to come in their way; but philosophic gold hunters pursue another plan—they stir up gold, sand, impurities, and all, with quicksilver, which liquid, we need scarcely observe, will neither unite with sand nor dirt, but it unites with gold and forms a paste, from which, by the new application of heat, the quicksilver may be driven or distilled away. This is called the process of amalgamation, and is very generally followed both for the extraction of silver and gold. We ought not to linger much longer over this ignoble metal; yet, before bidding adieu altogether to gold, its surprising power of ductility must be spoken of. Each grain of gold will produce, when beaten out, about 57 square inches of gold leaf, and each gold leaf so produced is only the 382,000th part of an inch thick. This, however, is a very considerable thickness in comparison with the gold on what is called gold wire and gold thread.

We do not profess to know whether the gay brocades sent for exhibition by our friends the Turks and Tunisians are embroidered with real gold wire and thread, but, so far as all the Christian manufacturers of these stuffs are concerned, the so-called gold wire thread is really only gilt silver wire thread, and it is to the extraordinary space over which gold is made to extend on these wires that we now wish to direct attention.

Let the reader picture to himself a bar of silver, about the size and length of a kitchen poker, thinly gilt with gold leaf; such a gilt bar being the raw staple of the gold wire and thread which glitters so brilliantly on the Greek and Russian gold brocades. But how to convert a gilt silver kitchen poker into a woven texture? The process is this. By means of suitable machinery it is drawn through a series of apertures, each smaller than the last; until eventually a wire of silver gilt results. The poker-like ingot of which we spoke was only thirty pounds in weight; the gold which covered it scarcely weighed ten grains: yet, by the process of wire-drawing, already described, the ingot is actually, in the ordinary course of manufacture, drawn out to the amazing length of *two hundred and forty miles!* Yet every portion of the extended silver wire has still a perfect gold coat—not a crack, not a flaw can be seen, even by microscopic scrutiny. But the surface-extending process does not end here; the wire is next flattened by passing between two steel rollers, which flattening just doubles the amount of surface originally exposed: still the gold is perfect in every part; so perfect, that if the flattened gilt wire be immersed in aquafortis, all the silver is dissolved away, and the gold coating left untouched. The flattened wire of which we treat, being spun round a filament of silk, is now fitted to be woven into those glittering brocades which are seen especially in the Grecian, Russian, and Italian compartments of the Exhibition.

And now, again availing ourselves of an associated idea, we will impress upon our readers a valuable chemical fact. It has been said, that if aquafortis be poured upon gilt silver wire, the silver will be dissolved, and the gold left untouched; hence it will ever be remembered, we trust, that pure gold can always be distinguished from gold adulterated with silver (or, indeed, copper), by the fact of its not being acted on by aquafortis. And now we will presently bid adieu to gold: it is an ostentatious, useless metal, of which some people entertain such a disgust, that, to avoid utterance of even its name, they call it *tin*. Subsequently to the last St. Albans election, however, we have occasionally heard it termed *bell-metal*. Between the value of the two synonyms, it would be arrogant for us to interpose an opinion.



GAS CHANDELIER.—BY W. POTTS.

GAS CHANDELIERS. POTTS.

These Gas Chandeliers, by Potts, of Birmingham, are remarkable for their simplicity and elegance; and will prove far more serviceable, and obtain far higher favour with the judicious, than many more elaborate and ambitious productions for a similar purpose.

CARPET PATTERN. BRIGHT.

This is a bold and well conceived device, exhibiting sufficient diversity of colour, agreeably intermixed. We may pronounce it one of the most satisfactory productions of the kind we have seen for a long time.

SILK PATTERN. SALTERFIELD AND CO.
SI AND ALPACA PATTERN. FOSTER AND SON.

In this page we give two examples of novel patterns for fabrics for

SILK PATTERN.—BY SALTERFIELD AND CO., MANCHESTER.

ladies' dresses, which the present Exhibition has educed. They are both creditable; the figures being moderate in size, and well blended.

SILK AND ALPACA PATTERN.—BY FOSTER AND SON, BRADFORD,

BRITISH INDIA.

THE vast tract of country comprised within the limits of the East India Company's territory contains upwards of 150,000,000 of inhabitants, with a revenue of £18,000,000 per annum: its climate varies from 120° Fahrenheit to 400°, with every possible kind of soil and cultivation. Looking at this immense region in what light we may, it cannot fail to attract our interest.

Here are endless fields and valleys, capable of producing all that is required amongst civilised nations—silk, and cotton, and sugar. The Indian continent might be made to yield enough cotton, wool, and silk to give employment to all the steam-looms of Great Britain, and to all the inhabitants of Europe, rendering our manufacturers independent of foreign cultivators. It is in this light that our Indian and Colonial possessions assume an importance, which cannot be tested by the mere contribution of raw produce from them to the Great Exhibition. Our Leeds, Manchester, Bradford, Coventry, and other manufacturers derive some of their more useful fabrics from this part of the world, and are enabled by the aid of Bengal dyes to produce the more lasting and beautiful colours at moderate prices.

Commencing, then, with silk, which is the most prominent of the fibrous substances of India, we find a great variety of filatures, such as those known as the Cossimbazar, the Surdah, the Baleahs, and Soogoopore, varying much in fineness, and running up in value from 7s. 6d. per pound to 18s. These we find in various stages of preparation, from the raw skeins to the coloured thread. They are not, however, to be compared with the produce of Italy or the south of France; but, on the other hand, they are produced at a little more than one half the price, and are therefore capable of being worked up for common useful articles, to which the Italian and French silks are not, of course, adapted by their price. The trade in this article from Calcutta amounts to about £700,000 a year, nearly the whole of which comes to Great Britain.

Of the Indian wools little can be said, unless it be of the beautiful Cashmerian fleeces, brought from the loftiest peaks of those snow-capped mountains: these are exquisite goods, looking more like piles of driven snow than vegetable substances.

Cotton is not a heavy article of export from Bengal, though in the Madras presidency it forms a considerable branch of trade, growing in vast quantities in the Tinnevelly district.

Besides these, there are Indian hemp, sunn, pine-apple fibre, and the fibre of the plantain. The first is a most useful article, producing a very strong kind of cordage for ships' use. The jute fibre is also used in large quantities for inferior kinds of cordage for country use, and is also shipped in large quantities. The plantain and pine-apple fibres are pretty, and appear capable of being worked up into useful fabrics, and merit attention, especially as they can be produced at a very low rate.

Coming to the collection of dyeing substances, we find foremost amongst them the "lac dye," so necessary to our cotton and silk manufacturers. This is prepared from a substance called "stick-lac," which is a concretion formed by the lac insect, on boughs of trees, to protect its eggs. It is melted, and the colouring matter being removed, the residue is clarified and forms the shell-lac of commerce, so useful as forming the basis of sealing-wax and some varnishes.

Skins form a large item in this collection; some of them are very fine and very well prepared: the finest amongst them are the tiger skins.

Bengal sugar, as exhibited, appears to be a beautifully fine article, clear and bright as crystal, and is now beginning to be well thought of in our market, proving very acceptable since the falling off in the production of the West India Islands. Rice and saltpetre do not afford so much room for comment, beyond remarking that they are leading articles of export to this country.

The collection of medicinal substances appears to be a large one, though hardly of sufficient interest to general observers. Amongst them we find castor oil, opium, rhubarb, and senna, from the Company's dispensary at Calcutta; these are too well known to require any comment at our hands. There are are also gums in great variety and of many qualities, used in medicine, manufactures, dyeing, and the fine arts. In addition to these, there are some score or two of strange-looking substances, with unpronounceable names, packed in funnily-shaped jars and bottles, said to be very efficacious in the cure of sundry local disorders, but not very attractive to European eyes. They are mostly from the vicinity of Calcutta and the Arracan country.

We have also delicately scented oils, made from the flowers or the root of the jasmine, the aloe plant, and the sandal tree, besides some oils of commerce of less attractive character.

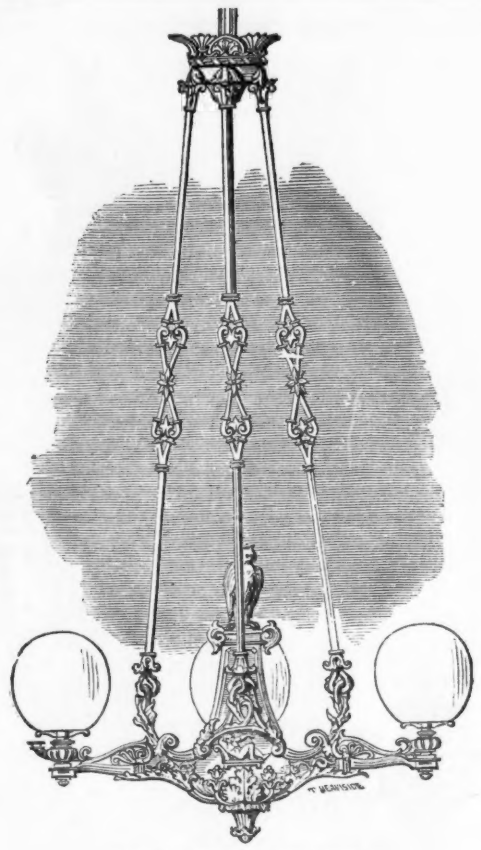
Aromatic spices and condiments are there, too, in great variety, including the black and white peppers, ginger, and cinnamon, from Rohilcund and Assam; the wild nutmeg from Nagpore and Agrum, and cinnamon from the Lower Bengal province.

The woods are very numerous, comprising about 850 specimens from various districts of Central and Southern India: they are nearly all unknown in this country, and very many of little utility save for the rougher purposes. There are some, however, very valuable for house-building, furniture, boat-building, machinery, general carpentry, &c. The most serviceable are the teak, ebony, and black-wood, which are found in the forests of Tenasserim, Moulmein, and Rohilcund.

The ivory which we find here is of good quality, coming from the Nepaul and Tenasserim states, but is scarcely equal to the tusks of the African elephants. The buffalo and deer horns from the Neilghurries are as fine specimens as we remember to have seen.

Besides these there are a great number of other raw productions, useful enough, no doubt, in their proper place, but scarcely possessing general interest. The edible birds' nests and moss of the Tenasserim district, and the sharks' fins and fish maws of Arracan will hardly attract the passer by, from their singular appearance.

Having thus briefly treated of the principal raw productions of this vast portion of our Eastern empire, we will proceed to notice the objects which are the result of labour applied to those natural products, and which may be comprised under the head of manufactured articles from the vegetable, animal, and mineral kingdoms. It is true, we may not meet with so much of the really beautiful, useful, and economical as are to be met with in the products from our highly-perfected manufactories where art and science are brought equally to bear; at the same time, there is much to admire in those Indian fabrics; and we should also bear in mind that some of our own staple cotton and silk goods are but copies of those originally woven in the "far land of sun-rise."



GAS CHANDELIER.—BY W. POTTS.

It is much to be doubted if we in England have any more delicate and beautiful goods than the muslins of Dacca. British skill and machinery have in vain essayed to rival the richly tinted shawls of Cashmere; and though, by the aid of steam and mechanical power, our silk manufacturers can undersell the bandannoes, the corahs, and choppahs of British India, it has yet to be seen if their goods will bear comparison as regards quality.

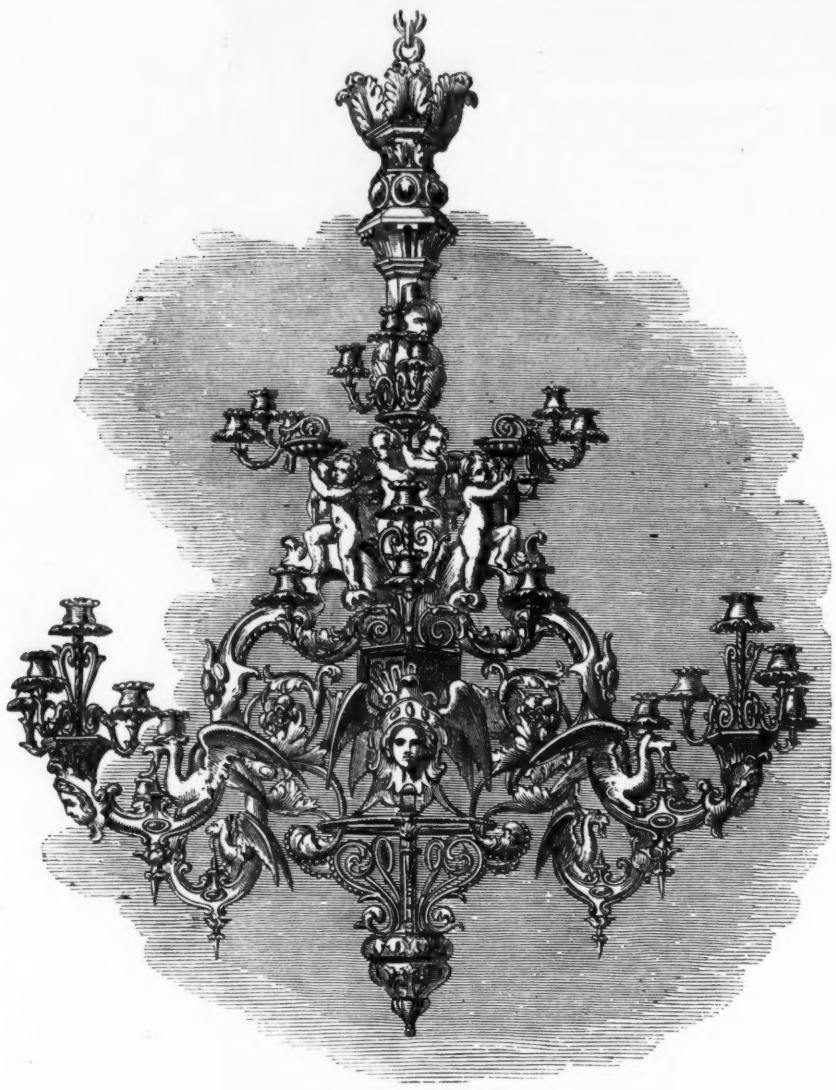
Taking the lead amongst textile fabrics, we have assuredly Cashmere shawls, well known, no doubt, to our fair readers, who, if they have not yet seen anything beyond a mere Manchester imitation, may now at any rate satisfy their curious eyes, though not their hands, by the sight of the glass-covered goods contributed by Mr. Cheape, of the Bengal service, and Mr. Emerson, of the Peninsular and Oriental Steam Navigation Company. These are both splendid specimens of the kind, revelling in all the most brilliant tints of the rainbow. Some of these shawls are very expensive, and generally made to order, costing from £30 to £300. The Rohilcund and Rajpootnah shawls do not equal the above; nevertheless, they are tasty goods, and much prized in India by native and European ladies. The export trade in these goods amounts to about £3000 per annum, almost entirely to Great Britain, a very few going to France and Russia.

Not nearly so showy as the shawls, but of far more commercial value,

CARPET PATTERN.—BY MESSRS. BRIGHT.

are the silk fabrics of India. Many of them are very delicate and rich, but not much known in this country, and indeed hardly calculated for other than tropical use. Moorshedabad has contributed some beautiful and highly ornamented flower-pieces for native dresses, some cloths in figures called sarees, and a few rich muslins and silks mixed, interwoven with gold and silken thread, made in Calcutta. The silk fabrics much in vogue in India amongst the natives, are mootkas poolkaries, moonies, and some others; but those which are necessarily the more interesting to us are the well-known goods called bandannoes, corahs, and choppahs. These articles are made in various districts of the Bengal Presidency: the specimens sent, however, are of Calcutta make, and are contributed by Mr. Jardine, the eminent merchant of that city. The value of the export trade in plain and figured silk goods from the port of Calcutta alone amounts to the yearly sum of £450,000; of these Great Britain takes £350,000 of corahs, and £40,000 of bandannoes and choppahs. France and America take between them about £4000 of mixed goods; and the balance, chiefly of low quality articles, are shipped to the coasts of Southern India, the Mauritius, Pegu, and the Maldive Islands.

The embroidered goods in silk and cotton are extensively used by the more wealthy inhabitants of Hindostan. They are very costly and showy, and are interesting, if only as proofs of the manual skill and patient industry of the Indian workmen. Delhi, the once celebrated capital of the world-famed conqueror of India, the city of the Great Mogul, has deigned to furnish its quota to the World's Fair. The articles from this part of India consist of rich and gorgeous apparel adapted to Oriental customs, such as head coverings and caps, fans, scarfs of silk and gold, shawls, &c. Dacca has not omitted to send a fair specimen of its handiwork, in the shape of embroidered shawls, scarfs, and body-pieces, richly worked in gold, silver, and many-coloured silks.



CHANDELIER.—HANOVER.

There are also some gay-looking trappings for horses and elephants, almost as richly inlaid and embroidered as articles for the use of princes: we have velvet and gold awnings for tents and howdahs done in many colours; hookah carpets, elephant trappings, waistbelts and turbans from Lucknow, Benares, Rajpootna, and Moorshedabad. All these articles are rich in the extreme, and, no doubt, have a beautiful effect when properly displayed in Eastern countries.

The Nawab of Jesselmeer has contributed from his own dominions sundry rather tasty dress pieces called "purgrees." The Maharajah Rao Scindia has also conributed magnificent Gwalior manufactured dress pieces, besides some very finely figured cloths "doputta" and 'patuls," worn generally by the fair sex of his dominions instead of shawls. The natives of high rank esteem much these goods, especially the "dhoties," two-striped muslins, and "purgrees," which certainly even to our eyes appeared both exceedingly rich and tasty, and by them are preferred greatly to our finest European productions. These goods, though so valuable, are entirely useless to Europeans; but have a most extensive sale in Bengal, and are mostly manufactured in the Nagpore districts.

The gurahs, which resemble much our cheapest long cloth, and were manufactured in immense quantities some years ago in Bengal, are now gone greatly out of use, being entirely superseded by the introduction of our Manchester and Glasgow cloths, to such an extent that the trade has decreased fully one tenth. There are many other cotton goods, but plainer—amongst others, the saries, bangomie chowkeedars, karolie jerrees, lerne kontas, doorsootees, lall chundras—which present little or no interest to the majority of Europeans. The Lessore, Rajpootna, and Benares states have contributed sundry ginghams, jailahs, coowohs, palemposes, and chintzes, which cannot in any way be compared with our own fabrics, and of which we have little to say.

The Indian leather, although not to be compared with European goods, is by no means of low quality, and we believe it to be well adapted to the trying climate of the East.

In pottery and glass ware the Orientals are not behind us very far, though their wares lack the artistic finish imparted to our goods during the last ten years. There is a graceful, pleasing lightness about the porcelain ware of the Azimgurh pottery, which cannot fail to strike the beholder not less than the singular simplicity of the make. The Mirzapore glass ornaments are, perhaps, well calculated to adorn the arms of dark beauties, but they do not strike us as being very graceful or ornamental.

In gold and silver ware the workmen of Hindostan are pre-eminent, whether it be for chains, necklaces, bangles, bracelets, or rings. Some of the light filigree silver wares of Cuttack, in Lower Bengal, are strikingly beautiful and Oriental in their style. The Delhi ornaments are much in use, and highly reputed by the rich natives on all festive occasions; and when we state that the dress and jewellery of a temple Nautch girl, or dancer, will sometimes be worth from £10,000 to £15,000, some idea may be formed of the lavish expenditure of Orientals in this manner and on these occasions.

STAND FOR PICTURES. LEISTLER.

A very convenient article for a studio or *boudoir*, for the display of a favourite gem or two in painting, family portraits, &c. It is handsomely carved.

STAND FOR PICTURES.—BY LEISTLER.

CHANDELIER. BERNSTORFF AND CO.

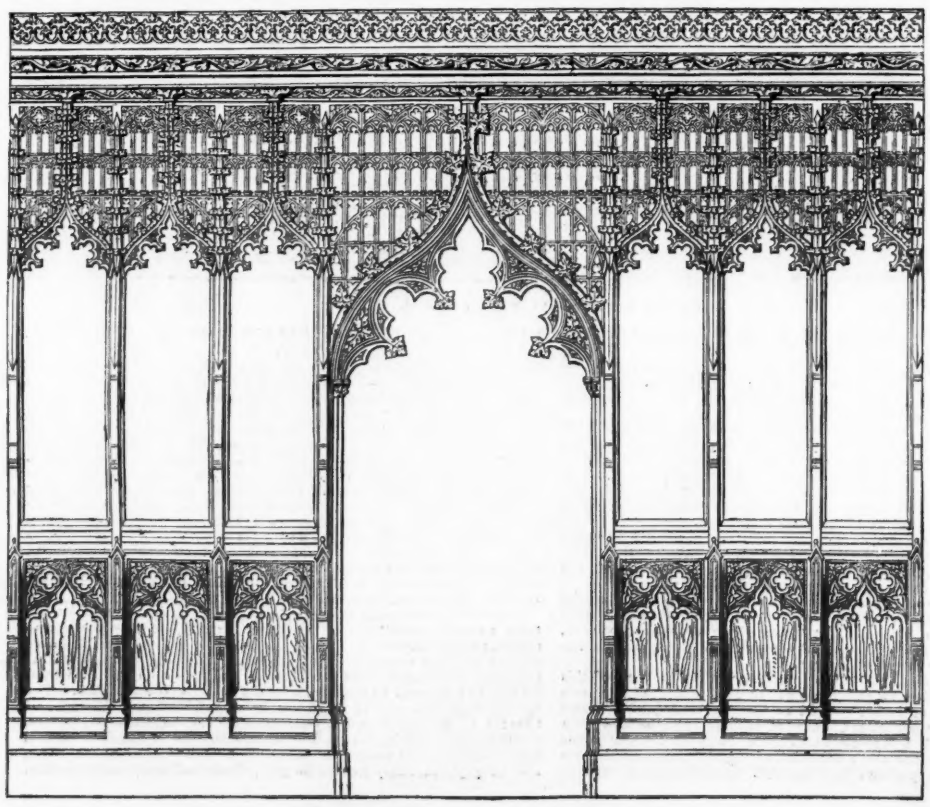
This chandelier is very stately in aspect, but very heavy, and very ungracefully shaped—being of the good old German school, of the early part of the present century. It combines every possible variety of style, is of bronze gilt, and will hold sixty lights. Messrs. Bernstorff and Co. are the bronze manufacturers to the Court of Hanover.

ROOD SCREEN.—DESIGNED BY J. CLARKE.

The rood screen, carved in oak by Ringham for a church in Surrey, is a fair specimen of the taste and talent displayed in these matters at the present day. It is in the Perpendicular style, and was designed by Mr. J. Clarke. The decorative details are extremely well executed. It may be observed, however, that the door has a dwarfish appearance, and would probably have been improved if the spring of its arch had been carried up to the same point as that of the windows.

GOTHIC CHAIR. WILLIAMS AND LUMSDEN.

This is a substantial oak chair, carved in the Gothic style, after a design by Mr. Christian. It has, to say the least of it, the merit of simplicity; but it is, nevertheless, rather too heavy for our taste, albeit the back and seat are covered with crimson velvet.



GOTHIC SCREEN.—BY RINGHAM, IPSWICH,—DESIGNED BY MR. J. CLARKE.

GOTHIC CHAIR.—BY WILLIAMS AND LUMSDEN,—DESIGNED BY MR. CHRISTIAN.

"HAGAR AND ISHMAEL."—TUSCANY.

MARBLE CHIMNEY-PIECE AND MIRROR-FRAME, FROM MILAN.

In the vestibule to the Austrian sculpture are two or three very showy marble chimney-pieces, some surmounted with mirror frames, which it is impossible to pass unnoticed, but which it is impossible to admire. Never, perhaps, was high art more misapplied; never was common sense, in the selection of decorative subjects, more lost sight of than in these notable productions. In any case over ornamentation of chimney-pieces should be avoided; and in all cases the ornamentation should be of an architectural character, in harmony with that of the rest of the apartment. The introduction, in sculpture, of subjects of vegetable or animal life, is of more than questionable propriety; the human figure, unless conventionally, should never be attempted. In the Austrian fire-places, however, all these enormities have been perpetrated, and with a lavish hand. In one we have full-grown urchins of Cupids carrying fish, flesh, fowl, and game, all executed in the round, with other intruders of the same family, all scorching their naked legs over the fire, and encroaching upon the fire-side circle; in another a nest of loves protrudes from the midst of the mantel-piece, various other devices being crowded in in all directions; in the third, which we have engraved, the artist's fancy revels, perhaps, in more elaborate absurdities than in any of the preceding two. On one side stands a full-grown Cupid, with his bow and arrow pointed at a young nymph on the opposite side, who seems to treat his power with levity; beneath are two female figures, who seem to acknowledge themselves as vanquished by the lady-killer; and above, in the midst, is a circular compartment, in which are the heads of two persons in close conference. All sorts of birds and flowers complete the *décoration* for this marble mystery; but they are not very successfully carved, and have a rough surface, which the dust will soon take advantage of. The ornamental parts of this affair have been executed by Giuseppe Bottinelli; the figures by Dominico Gandolfi.

"HAGAR AND ISHMAEL." BY VILLA.

In his small marble group of "Hagar and Ishmael," Signor Villa, of Florence, seizes a different moment from that selected in the same story by Max, of Prague, noticed in a previous article on Sculpture. In the latter the mother beholds the sufferings of her child, and appeals to Heaven for relief; an incident, the proper expression of which was admirably realized. In the work now before us Hagar is applying the bowl of water to the parched lips of her son. There is not the same amount of poetic interest patent in the one case as in the other; but what the subject afforded, Signor Villa has done justice to in this very pleasing and carefully executed composition.

"CUPID SHARPENING HIS ARROWS." LEEB

This little marble figure, executed by Leeb, of Munich, stands in the Zollverein Court, where, attractive at a distance, it disappoints upon a careful inspection. The figure is not that of a Cupid, neither are the wings, neither is the expression and the attitude; the limbs being all straight lines and angles, is inelegant.

CRYSTAL CANDELABRA. BY OSTLERS.

The magnificent crystal candelabra by Messrs. Ostler, the property of her Majesty, are only second in importance, as specimens of glass manufacture, to the far-famed crystal fountain, which adds a fairy-like charm to the Transept. They stand eight feet high, and will carry fifteen lights each; the glass being of the finest quality and colour, and being richly cut in prisms, will diffuse the varied colours of the rainbow on all sides around.

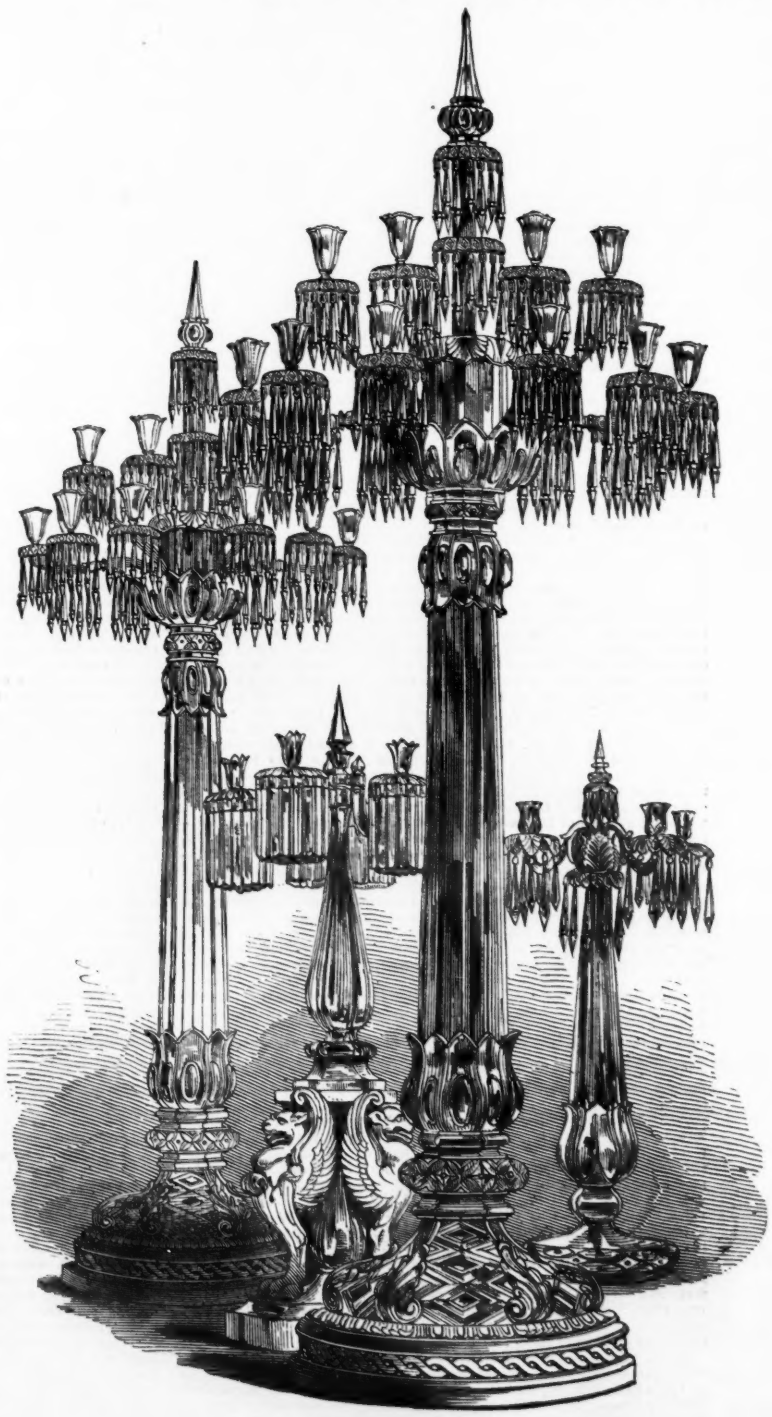
"CUPID SHARPENING HIS ARROWS."—ZOLLVEREIN

ZOLLVEREIN.

(SECOND NOTICE.)

Before entering the centre hall of the Zollverein, let us direct the attention of our readers to a somewhat elegant pillar which stands on the western side. It represents a group of Amazons, they being apparently great favourites with the Berlin artists, the great Amazon in the nave being only one of many in the Exhibition, made of cast-iron, at the foundry of Berlin, but curiously inlaid with silver. It is remarkable for the simplicity of its form and the beauty of its workmanship. The striking characteristic, indeed, of most of the productions in the centre hall, where are collected the gems of the Verein, is, we think, beauty of form. The

MARBLE CHIMNEY-PIECE.—MILAN.



GLASS CANDELABRA.—BY MESSRS. E. AND C. OSTLER.

principal contents of the hall are statues, statuettes, painted glass ornaments, pictures, one or two cabinets or ladies' desks, porcelain, &c., all belonging to the fine arts, and all in general distinguished by this characteristic. Even the Berlin porcelain, which occupies a large space in the room, and part of which is copied from renowned works of antiquity, such as the Warwick vase, is as beautiful in form as it is for its ornament, though the designs on it, after Mieris, Vischer, and others, are as fine as art can produce. Less meretricious in ornament than the productions of Paris, and less encumbered with it than those of London, the artistic productions of Berlin, and, indeed, of all Germany, are chiefly agreeable from the beauty of their forms. Even the elaborate carvings in ivory from Darmstadt, particularly the large goblet, on which the great victory of Hermann or Arminius, from a picture in the possession of the Grand Duke of Baden, is carved in alto relievo, is almost as remarkable for a graceful shape as for admirable carving. By crowding their finest room with almost innumerable articles of *vertù*, puzzling us to distinguish between them, and losing admiration for individual specimens in multiplicity, the Germans inform us that they set a high value on these comparatively trivial things. The production of them is what the influential government have chiefly encouraged: they have impelled the skill of the people in this direction, and we may expect, therefore—or where shall we seek for the utility of Royal and noble patronage?—that the arts which spring from them, or grow up under their encouragement, shall be marked by superior taste. Amongst the ancient Greeks, and amongst the inhabitants of India, a keen perception of beauty of form seems to have been inherent, and is found almost equally in some of their earliest productions, which have descended to us as in their latest. But, amongst the Saxon and Scandinavian tribes, judging from the rude figures of their old idols and earliest heroes yet extant, a perception of fine forms was not innate. It required cultivation, and has been cultivated by studying the examples of the people who were endowed with these perceptions. The high-born and well educated, the opulent and the ruling classes, have been the means of extending that cultivation. They are conduits through the which the old Greek perceptions have been conveyed to their unendowed and uncultivated countrymen. Thus we find their influence and the influence of courts more beneficial in these arts than in any others. Modern artists cannot boast of much novelty of conception. Their finest works, whether of sculpture, painting, or architecture, are generally imitations of the ancients. Nature is as pure and as free as in the times of the Greeks; but man's present perceptions are so mixed with ancient and derived knowledge, that they are confused; and artists are often the most graceful when they return to the original forms. For many years, even for centuries, European artists and their patrons have aimed at little more than at diffusing amongst the rude people of the North a knowledge of the forms that sprang up intuitively in the minds of the Greeks, and that they have only acquired by a laborious process. By the Exhibition this species of cultivation is rapidly extended; and it seems likely to do more, in a few weeks or months, to diffuse amongst our people a knowledge of graceful and artistic forms, than has before been done in ages. For the first time almost in our history the common people of England are brought familiarly into contact with, and derive instruction from, the clear, definite, and brillant conceptions of the Greeks, embodied into forms that have been preserved and spread by the influence of artists and courts through all Europe. Of our people, too, we are happy to say that the females share largely in the enjoyment and improvement. They are as numerous in the Exhibition as the males; they are much attracted by the articles in the Zollverein, and they observe and appreciate their charms. By a curious, and yet easily traced connection, establishing a moral relation between the most ancient and most modern nations, the keen powers of perception of the beautiful in nature with which the old Greeks were endowed, and which were denied to the ancestors of our race, causing a great moral difference between them, are now made to subserve to the improvement of the English. By the Exhibition the bulk of our people will be made familiar with forms derived from antiquity, and of which they could otherwise never have attained a conception.

We confess, however, to be puzzled, amidst the mass of articles exhibited by the Zollverein, most of which are not above mediocrity, in choosing some for Illustration. Leaving the articles of *vertù*, as more particularly belonging to other departments of our Journal—except to say that the bronzes are particularly worthy of attention, and perhaps the statuette of Beethoven, one of the most remarkable men of the last age, will not be overlooked—we must also mention, that, in the centre hall, a desk and a writing-table for ladies, manufactured by the Messrs. Barth Brothers, of Wurtzburg, in Bavaria, one in the rococo and the other in the *Rénaissance* style, are remarkable for the good taste they evince. In this room, too, a large collection of miniatures, painted on ivory, by a new method, by a Wirtemburg artist named Hilder, deserve notice for their boldness, though the artist does not inform the public what his new method consists in. We will not say more of the centre hall but to add, that the mass of things, many of them trifling, and some of them incongruous, which are here crowded together, many of which deservedly attract attention, is most unfavourable to a due appreciation of the separate articles. The inhabitants of the Zollverein have been ill-served by their Commissioners.

Amongst articles of utility, the cloths, which are very abundant, take the first place in the Zollverein; and remembering that the manufacture of fine cloth is rather modern in Germany, and that homespun woollens, till very recently, formed the staple dresses of the bulk of the peasantry, the progress of the Germans in making fine cloth does them great credit. For some of that they may thank our restrictive laws, which partly force their industry into that channel, and compel them to grow wool and weave it, instead of growing corn and exchanging it for woollens. The damasks of Saxony and the linens of Silesia, the latter now not so highly honoured as they were wont to be, also occupy a large space in the halls and in the galleries, and they are very old and very favourite productions of Germany. In damask linens they excel; and the productions of Messrs. Proels, senior, and Sons, of Leipsic, in the Saxon department, may be mentioned as an excellent example of the produce of the German looms. Many of the woollens that come from Prussia are as remarkable as the celebrated Berlin wool for the richness of their dyes; and there are some common enough cloths at the end of the gallery of the Zollverein, of the south side, that are worth notice on account of the boldness and distinctness, and the meaning—for many of our patterns are utterly destitute of any meaning—of the designs which ornament them. We discovered, on referring to the Catalogue, that the designs are copies of wood-cuts after Albert Durer, and we do not see why such things should not generally be reproduced, rather than unmeaning scrolls. We need say nothing of the patterns and the wools profusely displayed throughout the Prussian department, which has acquired a world-wide reputation as Berlin work, the delight of our wives, daughters, and mothers, and very often of no little comfort to ourselves in its results, if we are occasionally annoyed by it in its progress. Numerous patterns, as well as the materials for embodying them in the canvass, will attract the attention of the ladies in almost every part of the Zollverein, with many carpets, rugs, table-covers, &c., most of which are superior in their designs. In fact, the two circumstances, of the splendid dyes and the excellent designs, for which Prussian workmen and artists are famous, have combined to make Berlin work so general a favourite. In damask linens, in fine cloths of various kinds, and in woollens of every description and for every use, the Zollverein is particularly rich. Taken as a whole, woollens are not only the most useful but the most conspicuous production of German industry, and those in which they have attained the greatest excellence and are making the most rapid advances. Connected, too, with them, we must add that there are numerous specimens of very fine wool, the produce of the German provinces and other flocks.

Berlin has been famous, at least since the time of Diesbach, 1710, when Prussian blue was discovered, for its chemical products; and all through the 18th century, as well as before it commenced, some of the most distinguished names in the annals of chemistry were those of Germany. After the woollens, the chemical products of the Zollverein in the Exhibition rank high. The specimens of beet root sugar, which are perfect and the product entirely of chemical art, the specimens of perfumery, of various salts and pigments, the crystals of several substances exhibited, all testify to the fact that the Germans continue on this point to deserve their well-acquired reputation.

In the vast and very miscellaneous productions which they have sent us we can only particularise a few more. There are numerous specimens of types and of books, ornamented and plain, which do honour to German typography and their skill in illustration. Contrasting some of the books displayed there by Decker and others with the ordinary books and newspapers of Germany, it is impossible not to wish that in the matter of paper at least some of the substantiality of the books exhibited might be imparted to the common productions of the booksellers. But it is probable, after all that is said of the durability of books, that the most flimsy are the best adapted for our transition age, as not likely long to stand in the way, either on our bookshelves or in our minds, of the improved works of which they are to be the parents. Connected with books, are many maps, geological as well as geographical, with a large globe to show the comparative elevation of the mountains of the earth, and other helps to diffuse knowledge. The Germans are not behind in applying *papier maché*, which will take any form, and which, though made from refuse, is one of the products of human skill best adapted, of all those yet acquired, to various figured ornaments, as well as to many useful instruments and utensils. The Germans exhibit many specimens of their success in *papier maché*, the name of which informs us that the art is neither of English nor of German invention. As we have specimens of our coal, so the Germans, particularly in the Hamburgh department, exhibit many specimens of their charcoals, of which they make great use, and which they apply in various forms to various purposes. They show us, also, many of their mineral products, particularly from Nassau, from which little else has been brought than ores of lead, copper, zinc, manganese, iron, &c. Other things in which they excel, or at least make a good show, are philosophical and musical instruments—characteristic of their harmony and their devotion to science. In the Hamburgh department, we find not only some excellent furniture, but veneers fifty-four plates to the inch; or the mahogany is cut into planks, each of which is only the 54th part of an inch thick. Till a recent period, when Sir Robert Peel abolished the duties on furniture woods, the inhabitants of Hamburgh had a considerable advantage over our furniture makers, and they sent great quantities of furniture to various parts of America. They still carry on this profitable and useful business; but our people are now in a better condition to compete with them than they were, and, by the abolition of the duties, a valuable trade has been preserved to our country.

Here we must stop. Though the productions of German industry are by no means so numerous, so rich, nor so varied as those of French industry, with which, excluding Austria, they may be most appropriately compared—though the Germans are in the Exhibition remarkably deficient in machinery—their products are numerous and miscellaneous, and we can only, by treating of them under some of the various papers in which we technologically examine the different products to be found in the Exhibition, do them justice in detail. In general, except as to cast iron, bronzes, chemicals, dyes, and some woollens, German industry seems a step below that of either France or England. It is, however, plain that the Germans have a great aptitude to improvement: we regard them as only recently aroused to a due sense of their relative position in knowledge, skill, politics, and morals, to the rest of Europe. They occupy a noble country; and as they become sensible of their wants, they cannot fail to achieve a commanding success. In them we have great reason to be interested, and them we must wish to see strong, prosperous, and united. They stand between European civilization and Cossack barbarity; and the hope we have that the latter will not be suffered to advance and prevail westward, rests on the Germans, and rests on the improving people as contradistinguished from their interfering, and, we are afraid, sometimes retrograde rulers.

WARDIAN CASES.

IN various parts of the Building the visitor may observe live plants, growing, in some instances, under handsome glass shades, and in other cases in glass frames, of so unprepossessing an appearance that he might naturally be at a loss to account for the reason why so uninteresting an object has been sent to the World's Fair. These contrivances are called Wardian cases; it having been first discovered by Mr. Ward, that by them plants can be transported to and from distant regions of the globe, and also that by their aid the Londoner can succeed in growing a few flowers to cheer his habitation. Some years ago we remember to have seen the vessel about to start to survey the settlement of Adelaide, in Australia, and we were much delighted to see two or three of these cases filled with small gooseberry and currant trees, in order that the emigrants might enjoy those delicious fruits which we have in such perfection in this country; and now not a week passes but that ships arrive bringing plants from the remotest habitable regions in these Wardian cases, which have thus conferred upon us a power of procuring exotic vegetable productions, which before their introduction was never possessed.

Those more unprepossessing cases which may be seen in the East Gallery are the first cases which Mr. Ward made; and though, at the present time, their design has been much improved, yet it is interesting to have the first example of the invention. These cases form, as it were, a little world of themselves, in which those who cultivate plants may observe many peculiarities. From being closed, the heat of the sun bestows upon them a very high temperature at times, and the hygrometric state of the atmosphere within varies according to circumstances, in a manner which may interest the cultivator of plants, and give him ample means to exercise his observation and talent.

In London but very few plants will thrive. The Oriental plane rears its head in the heart of the City, in Cheapside, and forms a stately tree. Russell-square and Guildford-street exhibit, also, noble specimens of this beautiful tree; yet by coming into leaf late, and shedding its foliage early, it is not so susceptible of those influences which injure other plants. The lime tree will also partially flourish; and in the very centre of the Bank two noble and ancient limes shade the parlour from the scorching sun of summer, and yearly cast forth delicious perfume from abundant flowers. With these exceptions, flowers and vegetable structures can scarce be cultivated in London, except with the aid of a Ward's case. Residing in the very centre of the metropolis, we now write with two beautiful Ward's cases before us, which exhibit the most luxuriant foliage. In these cases we have at this moment the beautiful wax plant, or *Hoya carnosa*, in abundant flower. We have recently introduced the newly imported and lovely *Hoya bella*, which is also now in flower; and the odoriferous *Fracisea Hopeana* is always ready to refresh us by its scent on opening the door of the case. We have five species of Lycopodia, which gratify the eye by their luxuriant green; and no less than fifteen or sixteen species of exotic ferns gladden the eye by their charming forms, their verdant foliage, and luxuriant appearance. The leaves of the *maranta bicolor*, never soiled by wet, are of surpassing beauty; and several species of *Achemenes* are rapidly growing to display their brilliant colours in the latter part of summer. Many of our plants have been in their present situation for ten years, and so the delight which we have had in the observation and cultivation of them in the Wardian case, makes us look with increased interest upon those first examples of construction which Mr. Ward has contributed to the Exhibition. In one of those cases the observer may witness the celebrated Irish fern to be growing in full health, and the lovely little Tunbridge Wells filmy fern is also luxuriating. Our country friends will, doubtless, be much surprised when they are told that a small plant of the former fern, which grows wild in the British isles, fetches from ten to thirty shillings in London. The sale of ferns and native orchids has become a trade in London; and the most successful collector, Mr. Potter, readily obtained a large sale in the neighbourhood of the Stock Exchange. As within the last few months he has fallen a prey to phthisis, there is now an opening for any equally spirited collector to come forward and supply the Londoners with the objects of the vegetable kingdom which are now so extensively cultivated and admired.

Mr. Marshall has lately constructed a Wardian aquatic case, wherein he grows many curious plants, and the miniature pond is overhung by ferns, which, doubtless, will thrive well in that situation. By simply preventing the access of the London smoke to injure the leaves, we have this year succeeded in growing cucumbers in the very centre of the metropolis, showing what may be effected when the deleterious gases which emanate from the combustion of coal are prevented from exercising their baneful influence.

We take this opportunity of calling attention to the Wardian cases, because, much as their use has increased, still they are not near so much employed in large towns as they ought to be. The cultivation of plants is an occupation delightful in itself, and one that is calculated to afford intense pleasure to those who follow the amusement. In that gloomy prison of Pentonville, where the inmates are not allowed from their cell to see a passing cloud, it is recorded that the only pleasure which a prisoner could find was to watch from day to day the growth and flowering of a few pieces of grass, shepherd purse, chickweed, and groundsel when he took his daily airing in the little space allotted to his walk. Every London child should have his Wardian case, if ever on so small a scale. The love of the cultivation of plants would grow with a knowledge of their perfection, and the mind would be led insensibly by the true and natural process of thought, from a study of Nature's works, to the contemplation of Nature's God.

EXHIBITION NOTES.—No 4.

"THERE is nothing new under the sun," except the Crystal Palace, and the pacific industrial union of all the nations of the habitable globe under its transparent canopy! It is curious to speculate upon some of the concurrents to this extraordinary effect, and some of the minor actualities which conspire to render the collection within its walls altogether so marvellous. At a first glance it may not seem strange, that, but for the invention and use of steam, its vessels and its railroads, there could have been no such national Exhibition; and yet it is equally certain, that, but for another small and apparently very remote cause, the design could not have been carried out. Had England not created the new police, England could not have enjoyed her present safe and glorious position within the precincts of Mr. Paxton's magic glass-house! If such widely different things have contributed to the possibility of the universal meeting, it is hardly less remarkable that the very vanities and inutilities so largely mixed up with its important features, must produce consequences almost, if not quite as pregnant, with great moral, political, and commercial results, as the more gigantic materials in manufactures, mechanics, and scientific progress. In fact, there are scarcely any things here that can be considered as trifles. An American president in soap is a stimulus to our Hawes' and Hendries'; a new crochet pattern is enough to set thousands of needles to work in every family where this ornamental and industrious pastime is pursued; models from the pith of rushes offer patterns for interesting and remunerative employment; and, not to multiply examples of this sort, let us only look at the department Class 20, Articles of clothing, &c., to see how curiously our tailors are set to inventions by the novelties exposed in the Central South and South Transept Galleries. In No. 64 we have a "monomeroskiton," which, being translated, means a dress coat of British manufacture from one piece of cloth. Close by it (No. 65) is an "autocromatic" gown and Cossack waistcoat; and near about, the "duplexa," or morning and evening coat; safety pockets that cannot be picked; ladies' dresses with elastic sides; cloaks with capes to prevent drowning; complete coat, trowsers, and gaiters without any seam; and others with so few seams in comparison with what have been, that it appears evident, in a short period, tailors, like *Hamlet*, will know no seams.

In like manner, hair and feathers have assumed valuable functions—far more comprehensive than could have been imagined till witnessed here in such combinations, varieties, new applications, and innumerable embellishments and uses. In Class 28 (furniture), No. 91, there is a screen of watered silk from Scotland, whereon wreaths and baskets of flowers are wrought in feathers. In the Miscellaneous Class 29, No. 53, is a vase of flowers made from feathers; other vases of artificial flowers all around; and No. 63, the *Victoria regia* (already noticed by us) in its various stages of development—

> The Queen all flowers among,
> The river's empress, lady of the lake.

Flowers composed of human hair belong to the species of the ingenious, without the prospect of any derivable profit; but the other floral beauties scattered over many departments are not unworthy of a somewhat poetical illustration, in addition to our just praise of their usefulness in regard to costume, their being a branch of the fine arts, and their applicability to the improvement of manufacture, in the hardest of metals as well as in the softest of fabrics. The vases just alluded to in the small-wares exhibition, North Transept Gallery, do credit to the taste and execution of the workers in wax, shells, rice-paper, feathers, muslin, velvet, &c. They are mostly British, and range through the seasons. In one group we discover the early Primrose so justly a favourite with our elder bards, who have sung—

> Pale primroses,
> That die unmarried, ere they can behold
> Bright Phœbus in his strength.—SHAKSPERE.
>
> The primrose drop, the spring's own spouse.—BEN JONSON.
>
> Primrose, first-born child of Ver,
> Merry spring-time's harbinger,
> With her bells dim.—BEAUMONT *and* FLETCHER.

Her companion in the Crystal Palace, as in nature, is the Snowdrop, which—

> First in bright Flora's train galantha glows,
> And prints with frolic step the melting snows;
> Chides with her dulcet voice the tardy spring,
> Bids slumbering zephyr stretch her folded wing.
> Wakes the hoarse cuckoo in his gloomy cave,
> And calls the wondering dormouse from his grave;
> Bids the mute redbreast cheer the budding greve,
> And plaintive ringdove tune her notes to love.—DARWIN.
>
> Earliest but that decks the garden,
> Fairest of the fragrant race,
> First-born child of vernal Flora,
> Seeking wild thy lowly place.—LANGHORNE.

Congenial is the Crocus—

> Dainty young thing
> Of life! thou venturous flower,
> Who groweth through the hard cold bower
> Of wintry spring.
> Soft voiceless bell.—PRIOR.

And the Cowslip likewise

> Now ripe in vegetable gold,
> From calyx pale the freckled cowslip born
> Receives in amber cup the fragrant dews of morn

Thus tempted by the "sweet daughters of the earth and sky" as we have been to weave a garland of poetry into the descriptions of the utilitarians, it may not displease thousands of readers to afford them this play of the imaginative in the midst of their acquisition of knowledge in other divisions of this vast and multifarious resort. Well may the Daisy and the Violet follow these lovely harbingers of spring: there are charming models of both in this gallery; and when we recollect the opening by her Majesty, on the 1st of May, we cannot but recal the daisy tribute of Chaucer:—

> They bring in the kalendis of Maie,
> * * * * *
> An in special one called ye of the daie,
> The daisie, or flower white and rede,
> And in Frenche called la belle Marguerite.
>
> To hern I have so great affectioun,
> As I sayd erst, when comen is the Maie,
> That in my bedde there daweth me no daie
> That I n'am up and walking in the mede
> To see this floure ayenst the sunne sprede.
>
> So glad am I, that when I have presence
> Of it to done it all reverence,
> As she that is of all floures the floure,
> Fulfilled of all vertue and honoure;
> And ever ylike faire, and fresh of hewe;
> And ever I love it, and ever ylike newe,
> And ever shall till that mine herte die;
> Alle sweare I not, of this I wool not lie.

To our poetic father we will add two other eulogies:—

> Star of the mead, sweet daughter of the day,
> Whose opening flower invites the morning ray,
> Sweet daisy, flower of love.—LEIDEN.
>
> Thou unassuming common-place
> Of nature, with that homely face,
> And yet with something of a grace
> Which love makes for thee.—WORDSWORTH.

The Violet has been still more deeply prized, and found many a voice to swell its praise:—

> Violets dim.
> But sweeter than the lids of Juno's eyes
> Or Cytherea's breath.—SHAKSPEARE.
>
> Sweet violets, Love's paradise, that spread
> Your gracious odours, which you couched beare
> Within your paly faces,
> Upon the gentle wing of some calm-breathing wind
> That plays amid the plain.—RALEIGH.

And also the Lily of the Valley, of which the Bard of the Seasons sings:—

> Seek the bank where flowering elders crowd,
> Where scattered wild the lily of the vale
> Her balmy essence breathes.

And Shelley:—

The naïad-like lily of the vale,
Whom youth makes so fair, and passion so pale
That the light of her tremulous bells is seen
Through their pavilions of tender green.

The Daffodil makes a very showy flower, to remind us of the true Daffodils,

That come before the swallow dares, and take
The winds of March with beauty.—SHAKSPEARE.

Also the Lily—

Queen of the garden in white mantle drest,
The spotless lily waves her curling crest.

The Water-lily is still more resplendent in its artificial form, and justifies the muse of Shelley:—

And floating water-lilies, broad and bright,
Which lit the oak that overhung the edge
With moonlight beams of their own watery light.

And Moore—

Those virgin lilies all the night,
Bathing their Beauties in the lake,
That they may rise more fresh and bright
When their beloved suns awake.

Substitute the Crystal Palace for the crystal river or the crystal well!

Others of our homely flowers are copied with a truth which seems almost to scent them! Thus we observe two of our aboriginal favourites—

Oft musing by the greenwood side,
'Mid blue bells deep, and golden broom,
Time's ancient gateway open wide,
And far adown the gathering gloom,
On many a mouldering Saxon tomb
The oldest flowers of England bloom.

But our illustration would be a beggarly account if we neglected the great horticultural rival for beauty and admiration, namely, the Tulip, Whose red veins

Are flushed with deeper, warmer stains,
Glows in each leaf with more than Nimrod's fires.
Then comes the tulip race, where beauty plays
Her idle freaks.—THOMSON.

And the Rose—

The garden star, the Queen of May,
The rose.—BEN JONSON.

'Tis said, as Cupid danced among
The gods, he down the nectar flung;
Which on the white rose being shed,
Made it for ever after red.—HERRICK.

With this we would close, but for a temptation, not to be withstood, where flowers are embalmed in a perfume of poetry, as sweet as that which makes the rose the sovereign of all the floral tribes. We therefore conclude with Herrick's pretty legend, how and why the Wallflower was so called:—

Why this flower is now called so,
List, sweet maid, and you shall know.
Understand, this firstling was
Once a brisk and bonny lassie
(Kept as close as Danaë was),
Who a sprightly springall loved,
And, to have it fully proved,
Up she got upon a wall,
Tempting down to slide withal;
But the silken twist unty'd,
So she fell, and, bruised, she dy'd.
Love, in pity of the deed,
And her loving luckless speed,
Changed her to this plant we call,
Now, the Flower of the Wall.

It is to be regretted that the modelling of flowers and fruits in wax is attended with danger, in consequence of the poisonous nature of some of the colouring materials employed, such as white lead, vermillion, copperas, chrome yellow, &c. The handling of these is apt to produce partial paralysis; and, therefore, it is most advisable for our young and fair artists to avoid their mineral infection, and supply their place with vegetable matter, which is adequate to the production of all the required colours. On the arrangement of tints, we may add, much of the effect depends. Without taste in this respect, and even a scientific knowledge of complementary tints, a multitude of performances disagreeable to the eye are produced, instead of those harmonious unions which delight the sense, almost without our being aware of the why or wherefore. And when we consider how essential this intelligence is to the pleasing and beautiful in the manufacture of all coloured articles, we may learn that from the flowers of the field and garden there are lessons to be derived of infinite value to industrial arts.

M. Constantin's attractive case, No. 94, of France and Algiers has been twice noticed in the ILLUSTRATED LONDON NEWS (June 7th and July 5th); and at No. 430 mechanism has been applied to similar objects with marked success. If, in the one instance, we have botany developed to perfection by imitative skill, in the other we have ornithology, the most delicate, faithfully copied in metals the most stubborn. M. Bontemps has thus hatched, if we may use the expression, groups of humming-birds little inferior to those of Mr. Gould, in the Zoological Gardens; so that in art, as in nature, we get affinities running so closely into each other, that it is sometimes a difficulty to define which are the boundaries of their different kingdoms.

Turn which way you will, on every side there is much to be seen, curious, or amusing, or wonderful, or instructive—of the smallest, and of the greatest intrinsic value: mechanics, which render perceptible in steel the two-millionth part of an inch (Mr. Whitworth's), which the most powerful miscrocope, if a thousand times more powerful, could not make visible; an admirable front of Ely Cathedral in the pith of the common rush, with its niches filled with saints and apostles; the game of cock-amaroo improved; parasols with stilettos, and murderous or defensive umbrellas; the very entertaining stuffed birds and beasts of Wirtemberg—here equal to Snyders, and there comic caricatures of the most diverting kind; cavalry jack-boots and Scotch brogues; a sack sewn and made without hands; hammers that will powder adamant to dust, or fall as softly as a moth alights on a leaf; locomotives and levers beyond the dream of Archimedes as to moving the earth; the wonders of the printing press; smoked hams from Kentucky, and plates and briskets of beef—such and so various are the sights within the compass of the Crystal Palace; and such but faintly indicate the inexpressible and infinite number of other objects with which the genius of man or the bounty of Providence has adorned and enriched the world: but why talk of the sights to be seen, since on our last visit we observed a blind gentleman led about by a guide, and having the marvels of the place described to him as if he were an actual spectator!!

TOWN TALK AND TABLE TALK.

THE ultimate destination of the Crystal Palace is, I think, becoming the main subject of the town and table talk of the day. There seems likely to be a fierce battle fought upon the question, and, from all appearances, the probably successful party is still doubtful. The agitation in favour of upholding the structure is certainly more lukewarm than might have been anticipated, while the party whose war-cry is "The Park, the whole Park, and nothing but the Park!" is indefatigable in its exertions. Lord Brougham's behaviour in the matter does him infinite credit. He was one of the stanch early opponents of the site in Hyde-Park; but now that the triumph of Mr. Paxton's edifice is so clearly a *fait accompli*—now that the general effect of the entire Exhibition has been undeniably so excellent, his Lordship boldly and manfully came forward, in the teeth of his old, and, as he avowed, mistaken opinions, and presented Mr. Paxton's petition. Lord Campbell's speech on the matter was certainly a triumph neither of reason nor jocularity. The grim *facetiæ* wherewith it was studded are very characteristic. Whatever may be "Plain John's" capabilities, joke-making is certainly not amongst them; and his efforts in the way strongly remind one of the worthy Dutchman who half shook a house down by jumping over the chairs, in his anxiety to obtain a character for liveliness. Connected more or less with the Crystal Palace have been the several suggestions which have been circulated for throwing glass roofs over several of the principal thoroughfares, turning them, in fact, into vast arcades; and the still bolder scheme hinted at of arching a square or two with the same transparent covering. Lincoln's Inn-fields, for example, converted into a vast glazed flower and winter garden, would hold, at all events, a central position, forming, as it does, almost the very heart of London. The smoke, however, would be the great drawback. A fortnight's muggy weather would strew the whole surface of the glass with more "blacks" than there are in Africa, while nothing like the fine fresh air, which ought to breathe among the fruits and flowers of any garden, winter or summer, could, we fear, be entrapped beneath the glass athwart the roofs and chimney-pots.

Many of my readers have probably seen the unique letter of Bendigo, the "fistic" champion of England, an indignant reprobation of the French style of boxing with hands and feet, some specimens of which have lately been exhibited at various metropolitan gymnasia. After all, the professors of the noble art of self-defence have the strangest style of logic, and the most extraordinary notions of chivalry. They call their science "self-defence," whereas it consists just as much, or, perhaps, more, in the art of offending one's adversary—punching his head, rather than guarding your own. Again, they are always, like Mr. Bendigo, virtuously indignant if the feet be used to help the hands, and denounce the French mode of the *savats*, just as an orthodox Churchman would repudiate Mormonism, for instance. To people, however, out of the ring, there does not seem such vast difference in getting one's eye blackened by a blow from a fist, from the same catastrophe taking place thanks to a blow from a foot. Indeed, except when heavy shoes or clogs are used, one would think that the foot is the less formidable weapon of the two. Mr. Bendigo can double up his hands and fingers so as to convert them into two solid lumps, about as hard, we should suppose, as cannon-balls; but he can do nothing of the kind with his feet and toes: so that his pathetic complaint about the bloodthirstiness of the admirers of the *savate*—in which, by the way, there is far more fun than in boxing, produced by the incessant falls of the combatants, as they seize hold of each others uplifted ancles — does not appear to be very surely founded. Another curious fallacy of the admirers of the "ring" is, that, as fisticuffs go out, knives necessarily and inevitably come in. These good gentlemen can never conceive the notion of people living together without attempting to do violence to each other in some way. But do not the same influences which are gradually suppressing the boxing as one of our "institutions," naturally tend still further to suppress stabbing, which is certainly more fatal and dangerous than boxing? As to kicking as well as killing, the notion that it is "foul play" is merely founded upon conventional regulations. The "ring," or whoever was the Numa who first drew up its code, might have decreed that boxers should only strike with the right hand—that a blow from the left would be "foul." The left hand was not, however, forbidden. The feet were. But the admirers of the "ring"—unless they admit that they have beaten each others brains into a state of softness—ought to try to be more reasonable in their premises, and more logical in their conclusions.

Talking of boxing, and the good old times when it flourished—a novel has just been published by Lord William Lennox, containing what purports to be a true picture of what Westminster school was in the first quarter of the present century. I presume, from the matter-of-fact tone and style of the book, and from the numerous allusions to real personages which it contains, that the delineation is to be accepted as a literally *bonâ fide* picture. If so, there has been nothing for a long time published more startling. The leading Westminster boys are represented as being in the constant practice of visiting and consorting with the celebrated flash thieves, burglars, and horse-dealers who then infested the purlieus of Tothill-fields. The names and history of many of these gentry are given, and their careers traced to the gallows upon which they suffered. One of these, the "famous William Habberfield," the Westminster boy, Percy Hamilton—a mere sobriquet, as most people who read the book will think, for the noble author—states it was his "greatest ambition to be introduced to." Accordingly, his ambition is gratified, and a scene sketched in which the worthy in question, who is said to have been "the safest *fence* on town," that is, the most accommodating and convenient receiver of stolen goods, is represented as, in the full hearing of the young Westminster gentlemen, giving directions to his *pals* for the secure disposition of certain stolen property, and the baffling of the police. The cool *naiveté* with which all this is told, and the impression so frankly left upon the reader's mind, that the author never had any idea that there was anything in the slightest degree discreditable in the connexion—all this is quite curious in its way, and certainly throws a startling light upon the moral discipline of great schools, at all events, in the period in question.

The scientific debates held by the congress lately assembled at Ipswich were rather cavalierly treated by the newspapers, who fought shy of the sections, and laid themselves out more for the sayings and doings of Prince Albert. In the regions of chemistry, however, some noteworthy remarks were made. Alchemy is not a process in which people now-a-days have much faith. They mention with a sort of affable and self denying mildness and civility of contempt, the blear-eyed old transmuter of metals, poring with white beard and shaking skinny hands over his everlasting crucibles, and think with a chuckle what a stupid old zany he must have been to dream that bad pence made of lead and pot-metal could be transmogrified into shining clinking sovereigns. Not so fast, gentlemen, if you please. Chemistry and the cognate sciences are certainly more advanced now than ever they have been. We are in a fair way—we only want a certain number of degrees of heat—of turning charcoal into diamonds, and the electrologists are boasting that they have produced animal life. Well, then, touching the transmutation of metals. Dumas, the great French, and Faraday the, if possible, still greater English chemist, both declared their belief in the possibility of transforming the baser into the more precious sorts. They asserted their belief in the doctrine that all metals were formed of the same materials of basis, mixed in different proportions, and added that a change in the ratios of the materials in question, which might possibly be accomplished by chemistry, would be nothing less than a change of metals. I believe I am not wrong in adding that Sir Humphry Davy held the same creed; and I lighted the other day upon a very remarkable letter addressed by Sir Isaac Newton, when Master of the Mint, to Boyle, the experimentalist—that Boyle, who will be recognised by many as the "father of chemistry, and the uncle of the Earl of Cork;" the purport of the communication being, that the philosopher, with commendable *ex-officio* care for the value of the legal tender, earnestly entreated his fellow-labourer in science, out of regard for public and national interests, not to divulge the great arcana of projection, of which it was rumoured he possessed the knowledge. Sir Isaac's fears were premature; Boyle wrote "meditations," and the Dean of St. Patrick's quizzed them, but he never drenched the world with guineas, while, lest the present lord of the establishment on Tower Hill, or any other patron o the present currency, should be troubled with dire visions of a second California in a crucible, I may add that, in the opinion of the Ipswich *savans*, the chemical process of making gold will always, even when achieved, be far more expensive that the commercial process of buying it ready made.

The experiment made by the French philosopher, who coolly dipped his hands into a large crucible of molten iron, red hot, and sparkling and crackling, has simply been mentioned in the columns of recording contemporaries. From a gentleman present, I glean the following particulars:—The professor equipped himself in a sort of leathern cuirass, to ward off the heat from the chest, and with what may be described as the top part of gauntlets, fixing round the wrists and extending up to the elbows—of course, leaving the hands bare; over his mouth he had bandaged a wet cloth. Thus prepared, he smilingly approached the gleaming metal, drew deftly off a diamond ring, dipped his right hand into a basin of water, and then deliberately immersed it in the iron bath, keeping it plunged fairly in while you might count tolerably quickly three or four, and, upon plucking out, waving the member gracefully to and fro in token of perfect impunity. The process was repeated first with the other and then with both hands, not a burn or a singe testifying to an unprotected part of the flesh. The explanation of the experimentalist was, that the wet state of the skin was his sole shield—that the expansion, on its conversion into steam, of the liquid defended for a moment the flesh from the molten metal. The feeling, however, was general, that to a previous private application of sulphurous acid this modern salamander owed his curious immunity from the terribly condensed form in which he braved the "devouring element."

The wane of the season is beginning to be visible in the decreased number of concerts, and the few new exhibitions now being opened. Parliament seems, however, to be getting brisker than ever as the day on which the Park guns will sound their prorogation draws nigh. When the Lords do sit, they go through the thing in style. Generally, indeed, hereditary legislation seldom interferes with dinners, and the hereditary Bellamy cannot expect to make a very rapid fortune. But sometimes the Lords do make up for the usual infinitesimal sittings by a dismally long fit of talk. Bright morning shone through the painted windows the other day before the Chancellor left the woolsack, and the mighty majority upon the Ecclesiastical Titles Bill was secured. Parliament will, as usual, be prorogued more or less about the time of the commencement of grouse-shooting. Every session, and this has formed no exception, rumours fly about, prognosticating an early day for "being up," and quoting all manner of authorities for the assertion: the Speaker had said so—an Irish member had been heard to hint so—the people at the Treasury were certain—the committee clerks had managed to find out—Lord John Russell had stated as much in profound confidence to Lady John Russell, and so forth; but always, as July wanes, the mirage of prorogation flies and flickers with it; and nothing, as it would seem, but the smell of the heather and the whirr of the startled grouse can break the spell which binds honourable members to the red cushions beneath them and the glaring Bude light above.

A. B. R.

TO CORRESPONDENTS.

THE IONIAN ISLANDS IN THE EXHIBITION—In reference to an article on this department of the Great Exhibition, in our Supplement No 499, of July 5th, we are requested to state that not one of the articles exhibited have been contributed from the Islands; but they are a collection of articles of Ionian product and manufasture, in the possession of English noblemen and gentlemen who have served in the Ionian Islands, brought together from an anxious desire on their part and that of an Ionian gentleman long resident in this country, that the *laches* of the present Lord High Commissioner might not altogether prevent the Ionian Islands from being represented in this admirable congress of the world's industry. Indeed, we learn that the Executive Committee, when the matter was brought to their knowledge, under high auspices, took it up so warmly, that they immediately gave the space required by the Ionian gentlemen, and ordered all the necessary fittings to be put up at their own expense

BOOKWORM states, that in the list of Swimming Inventions, published in the ILLUSTRATED LONDON NEWS of the 19th instant, the swimming shoe or boot, with flappers, is the invention of Colonel Macerone, published in his memoirs, about the year 1817

WE are requested to state, that in the article, "A Lady's Glance at the Exhibition," in our paper of Saturday, the 19th July, the silk, which the writer characterises as the *chef d'œuvre* of Spitalfields production, is not exhibited by Mr Dear, or designed by a pupil from the School of Design, but is exhibited by Messrs Lewis and Allenby, of Regent-street, and designed by Mr S Lewis, jun

A SUBSCRIBER—There will not be another State Visit to the Opera this season, which will close next month

E B, Colchester; and MATHEMATICUS—We have not the address

A WORKING MAN—We have not space for your letter

M B—Your coin is a satirical medal of the sixteenth century, struck in derision of the Roman Catholic faith

A LEEDS SUBSCRIBER—See Lardner on the "Steam-Engine"

A FLANEUR—See Cruchley's New "Picture of London"

C W, Great Tower-street, is thanked; but we have not room for the Portrait

T A, Ayr—See Sir John Sebright on "Hawking"

AN INQUIRER, Edinburgh (Scandinavian)—See a paper in *Fraser's Magazine* for July, 1851

NEMO, Yarmouth—Meurice's Hotel is in the Rue St Honoré, Paris

A SEVEN YEARS SUBSCRIBER—It is not likely that the National Gallery pictures will be removed to Kensington Palace

J B E, Twickenham, is in error: the portraits are correctly named

A P T, Limerick—See the works on Emigration now publishing by Chambers, Edinburgh

J L F and T C J, Carrickfergus—We do not

J P, Middleton-on-Tees—The omission of a printer's imprint is finable

H R M, Belfast, is thanked; but we have not room for the sketches

A E I O U—See Paley's "Evidences," and Bishop Watson's work

TOM—Apply as to the pigeons in Leadenhall-market

ARTHURUS DEVONIENSIS—The Exhibition Supplements are intended to be bound with the other Numbers

C H—See the work on Ward's Cases, published by Van Voorst, Paternoster-row

J W B—Any book on Cricket will inform you

Y Z, SUBSCRIBER—The late Mr H P Hope paid for his blue diamond £13,000

H D—Her Majesty did not dance at the recent Guildhall Ball

J A J, Kennington-square—Two cupfulls is correct

CONRAD (Donegal), and M C—It is expected that the Great Exhibition will close about the middle of October

VERITAS states that in 1849 a pamphlet was published, by Major R Carmichael Smith, an Englishman, on the scheme of a railway through British America, as now proposed by Mr Asa Whitney

AJAX, jun.—We have not time to search after reviews

CHARLES JOHNSON—The Patent Swimming Stockings are made by Cox, Georgie Mills, Edrc, N B

AN OLD SUBSCRIBER—Cards to view St James's Palace can only be had at the Lord Chamberlain's Office

T J J, Liverpool—We shall be glad to see the Sketches

G N—A Guide to Port Philip has recently been published

WISCONSIN, Manchester, will, perhaps, explain

W L should address his letter to Lieut-Col the Hon C B Phipps, Buckingham Palace

APOLLO, who inquires as to the best mode of obtaining a clerkship in the Bank of England, is informed that its patronage is shared among the Directors, whose names are annually published in the almanacks; the Governor and Deputy-Governor having each a larger share than any other Director

A D E B—Our Exhibition Supplements are intended for binding with the other Numbers. The height of the rock of Gibraltar, according to Cuvier, is 1437 English feet

DISTANT, YET CONSTANT, Galway—Messrs Benning, Fleet-street

MOGUL—The Diorama of the Overland Route to India was first exhibited in 1849

H I, Preston—See Evans's "Sketch of all Denominations of Religion," latest edition

A VERY OLD SUBSCRIBER—A view and description of the New Orphan House, Ashley Down, near Bristol, appeared in the ILLUSTRATED LONDON NEWS, No. 450

A SUBSCRIBER (silver Coins)—1. Syracuse, Tetradrachm. 2. Athens, Tetradrachm. 3. Penny, Edward the Elder, 901 to 924. 4. Medal—Longing for Peace. 5. Tetradrachm, Alexander III. 6 Athens, Tetradrachm

DERRY—See the Ordnance Survey of Londonderry, particularly valuable for its geological information

Lines on the Amazon Group we have not room for

PETER—We have not heard of the drawing of the lottery in Paris

A Z—The Index to Vol 18 of our Journal was published last week

T A G, Torquay—The Count D'Orsay's statuette of the Queen will shortly be published in bronze, by Waterlow, Pall Mall

G S, Lisslade—See the "Manual of Oil Painting"

IRELAND—The "Story of the Present Day" was completed in the Supplement given with our Journal for July 19

A CORRESPONDENT, Tavistock—The fares from London to Paris are daily advertised

HAWK, Birmingham—The Crystal Palace is between Rotten-row and the Kensington Drive, Hyde Park

E C, Lord Ellesmere's collection of pictures was formerly called the "Stafford Gallery"

MINIMA—See explanation of St. Swithin, in the "Illustrated London Almanack" for 1845

W H Q, B B, and N F G—We cannot inform you

R E, Carlisle, is thanked but we have not room for the illustration

W W R P—Major's edition of Dr Trimler's Hogarth contains a complete list of Hogarth's works.

TOMBS AT AGRA and Kussowlee, Range of Himalayas (three Sketches)—We thank the artist for his offer of these Sketches, but we have not room to engrave them

W W. Osbertson—We do not unders and the question

W M Q, ANTI-AXIOM, and CHELTEQ—We have not space for further replies as to the rotation of the earth experiment

SOCIUS DUNELMENSIS.—Viscount Palmerston, being an Irish Peer, and having consequently no seat in the House of Lords, has been elected to the Commons by an English borough. Searle, of Cornwall, bears for *Arms:* "Arg. a chev sa. between three doves ppr. *Crest:* On a mount vert, a greyhound sejant arg. ducally gorged gu"

HERALDICUS—The motto to the arms in question we do not know. The family belonged to Northumberland

S B C—Gu three mullets or. *Crest:* A dexter arm embowed, brandishing a club ppr., the armorial bearings of Burkitt

ZAPHNATHPAANEAH—Woodward, of Worcestershire: *Arms:* "Arg. three bars gu.; over all as many stags' heads cabossed or; on a chief sa. a wolf *passant* between two phœns of the third. *Crest:* a demi lion rampant sa. holding between the paws a pheon or."

SHIELLY—Sir H W Barron represents the city of Waterford; and Pierce Somerset Butler, Esq, the county of Kilkenny, in Parliament.

HERALDICUS—*Arms* of Speke: "Barry of eight az. and or; over all an eagle displayed with two heads gu *Crest:* a porcupine."

F S A—If you had a paternal coat, you would be entitled to quarter your grandmother's arms; but, not having any ensigns of your own, you cannot assume those of any other family from which you descend

G V, Southam—A crest cannot be assumed without due authority; a motto may

AN ARTIST—Both bearings have been used by the family of Glenn

Δελτα—We can find no record of any arms to Vinen. A reference to Collinson's "Somersetshire," under Chard, might possibly throw some light on the subject

LEICESTER—A lady is not entitled, under any circumstances, to use a crest. A son has a right to quarter his mother's arms, if that lady were an heiress or co-heiress, but not otherwise. A husband *impales* his wife's arms: if she be an heiress, he bears them on an escutcheon of pretence

C E, a Constant Subscriber—Your mother's only brother having died without issue, you are entitled to quarter your mother's arms

A SUBSCRIBER—The ticket must be presented at the Stamp-office when due

ANTI-RE-RAPHAELITE—Apply for the drawing-book, at 86, Fleet-street

M D—The registers at the church may possibly afford the information

A SEVEN YEARS' SUBSCRIBER—Tickets to view Syon and Northumberland House should be applied for at the latter

W M, Corfe Castle, and A M'K, Elgin—We cannot

A SUBSCRIBER, Dover—See Minters's work on "Modelling in Wax"

IGNORAMUS—See Sir John Ross's last voyage to the North Pole

J W, Liverpool—We do not interfere in wagers

H H—A portrait of Mr Disraeli, M P, appeared in our Journal, Vol 4

W H, Bleckley—"Boswell's Life of Johnson" will be completed in four volumes of the "National Illustrated Library"

SCRUTATOR, Liverpool—We cannot inform you

W M, Bishop-Stortford—The subject has too "proprietary" an interest for illustration in our Journal

IRENE, Liverpool, is thanked for the lines, though we have not room to print them

X, Stornoway, should apply to the Registrar of St George's, Hanover-square, in which parish Maddox-street is situated

ASHBURY—Newspapers of any date may be sent postage-free in England

F W, Liverpool, should apply respecting the telescopes and optometer to Messrs Horne and Co., 13, Newgate-street

W S C, Birmingham—We regret that we have not room

BIKE, Lincolnshire—See Cruchley's "New Picture of London"

S E H, Van Diemen's Land—We cannot possibly devote the requisite space to the subject

A SOMERSET CORRESPONDENT—We regret that we have not room

D M'G, near Glasgow—Any newspaper written upon, save with the address, is chargeable, if sent by post

R M—Mr. Hunt, of the Museum of Practical Geology, Jermyn-street, St. James's, will inform you

ATTENTA—We regret that we have not room for the lines

J S, Tonbridge—The *Great Britain* was originally fitted with a screw, not paddles

VISCOUNT OF ENTRECOLLES—The O'Connors claim descent from Muiredhach Tireach, King of Ireland, who died in 366. The arms are sometimes used, "Arg., an oak tree vert," and at others, "Per pale purp. and arg.: on the dexterside a lion rampant, respectant the sinister side; on the sinister side, an oak tree vert. *Crest:* An arm in armour, embowed, holding a sword arg. (sometimes entwined by a snake ppr)"

Ζεύς—The gentleman in question be ars a name to which arms have been duly recorded, but we do not know whether he can substantiate his right

G, Baltimore—We do not think that there is any existing family of position bearing the name of Teesdale. The name was formerly spelt Tickhill.

INVESTIGATOR—Were there not two Bishops of St Asaph of the name of Horsley?

M E C, Derby—Until the alteration of the styles in 1752, the year did not legally and generally commence in England until March 25; hence the passage in "Reginald Hastings," vol 3, page 68, is correct

J J B, Devonport—The Portrait has not appeared

Z, Doncaster—Apply to the Secretary of the Executive Committee, Great Exhibition

LENS—Apply for mounting glass to Horne and Co, 13, Newgate-street. Prichard's is the most complete Treatise upon the Microscope

I M, Lambeth, should send his suggestion to the Royal Commissioners

X is thanked for his well-intended letter on Wood Engraving

S A L should apply to the Secretary to the Executive Committee of the Great Exhibition

G G, Newry—We regret that we have not room for the statement

C C, Hull—Stearine may be had of a druggist

MIGNONETTE—Miss Coutts's address is 1, Stratton-street, Piccadilly

E A Y, Frome—We have not engraved the subject in question

A SUBSCRIBER—Upon State visits to the theatre, wax lights are borne before the Queen by the lessee or manager

H M, Eastham Hotel, and H R G H, Margate—We have not room

J C, Battle—Apply for ticke s to view Windsor Castle, at Ackermann and Co.'s, Strand

AN ALUMNUS of Marischal College, and W H U, Armagh, are thanked; but we have not space for the illustrations

E I C—The crab is one of the class Crustacea

J W, Dublin—The charge is correct

E S—We are not in the secret

S T G—See Nesbitt's "Arithmetic"

B B, St Asaph—We cannot inform you

F H G inquires for the derivation of Pie-nic

F A, Worcester—We have not room

CLERICUS OCCIDUUS is thanked

B H, Jersey—The evasion would be illegal

C S H—We have not room

NERO—The practice is illegal

S W, Bridgwater, is thanked

J B, Birmingham—We have not room

H P—Hippodrome is in three syllables

D B—We cannot inform you

T P, Derby—We cannot venture an opinion

A M Z—See either of the Guides to California

W B, High Holborn—We have not room

CHANNEL ISLANDS—Already illustrated

J C, Billericay—Under consideration

J C, Uppingham—We cannot inform you

E C, Lancing—We have not room

A VEGETARIAN—We have not room

P C K—The letter should not be sealed

F N B M, Dorchester—We have not the date

M T M—Address, the House of Lords

E E of E V—We have not room

M A H—Address, Buckingham Palace

W B, Wapping, is thanked

Z, Galway—We cannot inform you

C T W, Plymouth—Received

C P, Dunmow, is thanked

W M, Penrith—Not received

T M F, Brighton—See the description

SPAIN—Cocoa and cacao are synonymous

SIMPLEX—Not worn in either theatre

C C, Madrid, is thanked

THE AGRICULTURAL DEPARTMENT.

THE AGRICULTURAL DEPARTMENT.—CLASS IX.

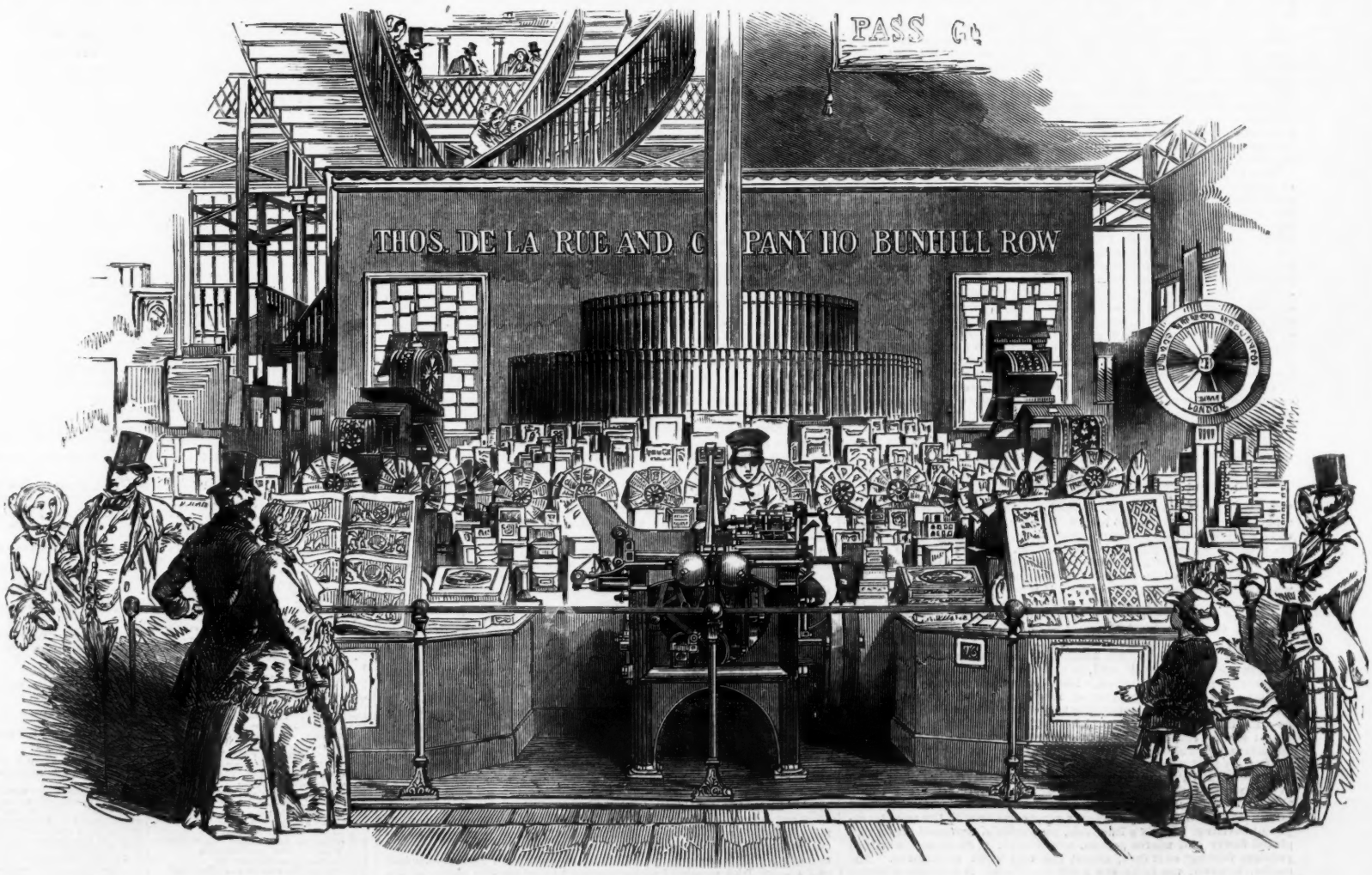
THE extra attraction of the Cattle Show at Windsor has brought an immense number of agriculturists from all parts of England, and, as may be expected, Class 9 of the Great Exhibition has been unusually crowded of late; in fact, there has been scarcely room to move, without finding oneself entangled amongst the innumerable prongs, knives, spikes, and other formidable-looking apparatus here offered for the inspection of the farmer, and exciting the wonder of the uninitiated.

Class 9 has received, ever since the opening of the Exhibition, a large amount of attention from all classes, and especially from foreigners, numbers of whom may always be found examining with great interest the details of the various machines, and discussing their numerous advantages. They have also given orders for an immense number of every description. Nor have the English farmers allowed so splendid an opportunity to pass by of setting themselves up with a fresh stock of improved implements, one firm alone having received orders at their factory, since the opening of the Exhibition, for £4000 worth of agricultural implements, to be executed similar to articles exhibited by them in Hyde Park. But perhaps the most gratifying sight in visiting this class is to watch the interest taken by the large number of agricultural labourers in the immense variety of things here exhibited, and upon which they are well able to form opinions. To these men an exhibition of their own everyday working gear, of such variety, beauty, and ingenious design must be a great treat. Their masters have been in the habit of seeing similar collections at the annual agricultural shows; but the labourer, who seldom leaves the land on which he works, can have had but few opportunities of seeing more than the old-fashioned implements of his own locality; hence much of the absurd prejudices so frequently found among this class, but which this Exhibition, more than any other thing of this time, will tend to remove. Of the immense variety in the form of the tools he uses, he could have formed no notion, There are a hundred ploughs in this class, no two of which are precisely alike. That a great change has of late taken place in the opinions and practice of the British farmer, there can be little doubt; for many of the ingenious contrivances (for their advantage as well as that of the public) here exhibited have been many years in forcing their way with these practical men, who invariably have heretofore set their faces against them simply because they were new. This is not now the case; agricultural machinists are well supported by the farmers, who buy immediately anything that is offered as an improvement with a fair chance of success. This is caused by their now being driven to study the principles of the machines they use, and which enables them to form better judgments of what they should purchase.

One may often now observe gaitered gentlemen from the country opening fire-doors of engines, counting tubes, and discussing the relative merits of oscillating trunks or fixed cylinder engines, in the most learned manner, of whose very existence a short time since they were utterly ignorant. Let us hope that these are some of the many benefits we shall receive from the more enlightened policy now pursued in reference to agriculture.

DE LA RUE'S STALL.

The annexed Engraving of the stall of the Messrs. De la Rue will afford perhaps agreeable reminiscences to the thousands who have watched the process of envelope-making by the ingenious machinery here employed, which we described in a previous Number.



DE LA RUE'S STALL.

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